DISCIPLINARY AND TRANS-DISCIPLINARY KNOWLEDGE AND SKILLS FOR AN UNCERTAIN FUTURE: ARE EDUCATIONAL MEDIA UP TO IT?

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Iartem Conference

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Institutional Greetings

Anna Dipace

As Rector of IUL, I cannot but be proud of our collaboration – alongside that of the National Institute for Documentation, Innovation and Educational Research (INDIRE) – at the XVI Conference, promoted by the International Association for Research on Textbooks and Educational Media (IARTEM) and held in Florence between 6 and 8 April 2022. And I am all the more proud because the Proceedings will be published in the "Research" series of IUL Press, which specialises precisely in the themes of didactic innovation and the topics covered by the university curriculum.

It is, in short, an honour for me to represent a university that was born in the new millennium in an incomparable city, Florence, which was the cradle of the Renaissance but which has shown that it is willing to project itself forward and accept the challenges of the present and the future through innovation and technology. The city of Florence was the birthplace of an immense and inestimable heritage of culture and education, at the top of which is the Commedia, a poem that represents, among other things, the first treatise on education in the Bel Paese.

The conference was attended by over one hundred and forty scholars from all over the world thanks to the choice, adopted for the first time by IARTEM, of the hybrid mode, in presence and live streaming. The conference saw over one hundred papers and boasted prestigious speakers such as Gino Roncaglia, Anne Mangen and Gert Biesta.

The title of the conference *Disciplinary and trans-disciplinary knowledge and skills for an uncertain future: Are educational media up to it?* is intriguing and reassuring because it focuses on disciplinary

and trans-disciplinary knowledge and skills. At the same time, however, it is also provocative and even disturbing because of the uncertain qualification given to the future.

Far from rhetorical, then, is the concluding question as to whether educational media (from paper and digital textbooks, with their related gender issues, to open resources for self-publishing) are and have been up to the task, especially during the pandemic.

In addition to disciplines and media, other crucial topics were also debated, from teacher training, which now deserves proper reform, to inclusion, always sought after and never fully achieved, to early childhood, with all its peculiarities, to the role of families.

The richness of the topics addressed is impressive and is also testified to by the parallel sessions: Early Childhood, Representation and narration in educational resources, Evaluation, Inclusion, Reading, Game and Robots, Online teaching and learning, Art and Music, Theories and Projects, Contexts, Resources. The queen word among those most frequently recurring in the various interventions is education in its various declinations: digital/childhood/special/world centered education.

Another debated issue is the relationship between "textbook" and "new media". Between them there is not, as often seems to be, a real antithesis, but they are instruments that together comprise an invaluable cultural heritage that the whole world recognises.

This very conference demonstrates that alongside the more classic textbook, the textbook that for centuries was the only and fundamental teaching tool, today new media are also a resource, a heritage that can be accessed without limits or boundaries thanks to digital.

New media are emerging and presenting themselves as tools with enormous potential but which deserve deep reflection from different perspectives. Only a multi- and trans-disciplinary vision can in fact help to understand them and use them in a truly effective manner, to map out methodologies that can be effective in training.

The conference in April was a good testimony to how important it is to keep the discussion on training media open and alive because it is largely on them that the success of training in all ages, from early childhood to the elderly, depends.

The need for training has been growing more and more in tune with the growth of the subjects to be trained and with the now widely

accepted notion of "inclusion", which broadens and retrains the pool of learners to an extraordinary degree.

In conclusion, I warmly welcome the publication of these proceedings and I am certain that they will be as successful as the Florentine conference last spring.

Florence, December 2022

Introduction

Alessandra Anichini, Tânia Maria F. Braga Garcia,
Francesca Pestellini, Guilherme Gabriel Ballande Romanelli
and Jesús Rodríguez Rodríguez

This volume contains some of the reflections presented at the XVI IARTEM Conference, which took place in Florence from 5 to 8 April 2022 (https://iartemconference.iuline.it/). It was a "difficult" conference, postponed due to the Covid-19 pandemic (it should have taken place in September 2021). Pandemy also complicated conference's realization in April 2022, when there were still some outbreaks of the disease affecting many countries and making travel not always easy. The conference, however, took place thanks to an active collaboration between IARTEM, INDIRE and the telematic university IUL. IUL University took it upon himself to find a suitable venue for the initiative (a historical and prestigious location, the Auditorium of the Florence Chamber of Commerce, on the Lungarni) and provided a dual mode of participation (in-person and online) to ensure that even those who had logistical difficulties in traveling could take part in the conference. We thus welcomed around 80 participants in presence while other 50 participants were able to take advantage of coordinated online connections within the individual workshops organized.

The title of the conference was debated at length among the members of IARTEM board, and eventually took this long formula that ends with a question: *Disciplinary and trans-disciplinary knowledge and skills for an uncertain future: Are educational media up to it?* The reference to two key issues is explicit: the first concerns the relationship between disciplinary and trans-disciplinary knowledge and, by extension, between knowledge and skills: a relationship that is not always peaceful, which often pits, on the one hand, the supporters of a rigid disciplinary framework, obsequious to a school tradition that assigns to the "syllabus" the task of guaranteeing students' knowledge and, on the other, the supporters of a school that focuses on

inter- and transdisciplinary competences that, while recognising the value of knowledge, opts, however, for a curriculum based on themes, problems to be tackled according to multidisciplinary perspectives.

Those who proposed the title of the conference prefer a vision of mediation, which puts together knowledge and skills, as well as epistemological depth of knowledge and an approach that allows for those necessary "disciplinary encroachments", as Morin states, that do not deny the traditional framework, but propose a multi-perspective and complex vision on subjects. In fact, it is precisely in the logic of complexity that we move to face that "uncertain future" that presupposes on the part of every citizen of the planet the ability to understand, analyse and propose solutions, refining a critical and conscious perspective at the reality in which we live.

Gert Biesta, one of the keynote speakers present at the conference, questioned, in fact, whether the future was ever "certain" and expressed his reservations about a rhetoric that tends to emphasize a prospect of "uncertainty" that is now considered inevitable, as well as the idea of an education that emphasizes skills and learning, placing the value of teaching and the "gift" that teachers can offer the new generations in a subordinate position. Biesta's vision goes against the trend, but serves to contextualize the richness of the speeches we have collected, coming from very different countries and school systems and that tackle the difficult task of training world citizens in dissimilar ways, entrusting the textbook and digital media with tasks that are sometimes quite dissimilar. While on the one hand, work is being done to denounce the very existence of a textbook designed to represent a "given syllabus", not in line with the real needs of students, in other contexts the search for textbooks quality is being pursued to prevent them from containing inaccuracies in content or being bearers of questionable cultural values (see the issue of gender stereotypes contained in many pages of school books); elsewhere, reflection is being done on the new educational tools, which flank, supplement and sometimes replace the textbook itself. In Biesta's words, therefore, we found confirmation of the desire to emphasize the joint importance of two different dimensions of training: the more content-related aspects and the more methodological ones; knowledge, precisely, and didactics with its strategies and tools.

The second part of the conference title, expressed by a question, reflects precisely on the role assigned today to the textbook and more

generally to educational media in the difficult task of contributing to the development of an education that takes account of this complexity. What is today the role of these tools, which in the past were considered fundamental in guaranteeing everyone that uniformity of education, as a guardian of democracy? And how can the advent of educational media that complement the still massive presence of paper and digital textbooks represent an opportunity for the renewal of the school itself? This was discussed at the Florence Conference, with a wealth of interventions that is contained in this volume and yet does not exhaust it.

The richness of the research presented was combined with the depth of some of the speeches (including Gert Biesta's own) that helped to create a framework of meaning for this meeting. Starting with the speech of Gino Roncaglia, for many years scholar of the historical significance of the textbook and its digital transition, in Italy. Roncaglia is responsible, in our country, for much of the reflection that politics has made its own when attempting to introduce digital textuality in schools. INDIRE, for its part, has contributed to this debate by investigating the ways in which the proposal of digital textbooks can contribute to reintroducing modes of self-production of supplementary educational content that assign students an active role in the construction of knowledge. In addition to Roncaglia and Biesta, the conference saw the presence of Anna Mangen, coordinator of the European COST IS1404 project E-READ: Evolution of REading in the Age of Digitisation and a careful scholar of the relationship between reading on paper and reading on digital devices. Her speech aimed at emphasizing one of the key aspects that IAR-TEM research has been pursuing in recent years, in advocating a sort of "integration" of the whole digital media part with respect to the traditional concept of the textbook. Educational media, in fact, is the definition we are using, in the awareness that the textbook in its new forms and content can still represent an important thread for the work of students and teachers.

In addition to the contributions made by the keynote speakers mentioned above, the Florence Conference offered an important set of presentations by experienced researchers and researchers in training from different countries in Europe, Africa and Latin America. In thematic sessions, the presentations took place in person or online; the texts corresponding to each presentation have been gathered in

this publication in ten chapters; they emphasise the diversity of focuses and approaches of educational media researchers.

Disciplinary didactics. Disciplinary knowledge is covered in twenty-four texts that make up this volume, with authors and co-authors from different countries. They are presented in chapters that focus on particular elements related to Specific Didactics: Languages, Natural Sciences, Physics, History and Mathematics. Textbooks and other printed and digital materials used to teach these subjects were analysed by the researchers. With an emphasis on the circulation and use of resources, some of the texts analyse the content, highlighting relations with the school syllabus and specific themes; others analyse methodological aspects, concepts and images. Relationships with cultural elements, production processes and teacher training are also addressed by the authors, resulting in an interesting sample of the content and form of research carried out in different disciplinary fields and educational systems in various countries.

Early childhood. This section of the book contains the results of different research related to the presence of digital resources in the classroom. The texts incorporated address issues related to the vision of teachers and families on the subject, research methodology followed in the analysis of the presence of digital resources in the classroom and aspects related to the conceptualisation of digital resources.

Pandemic period. This section brings together a series of works and research that have had as a fundamental reference studies carried out in relation to the Covid period in our educational contexts. In this context of unpredictability and lack of definition, one of the curricular elements that has been particularly sensitive to this situation has been the teaching materials. Suddenly we find ourselves with offers and proposals for portals and open educational resources with the aim of helping teachers, students and families to maintain the "rhythm" of the course and to try to compensate for possible deficiencies in the educational processes. A hotbed of initiatives and resources which, in some cases, did not fail to lead to a veritable info saturation of content and initiatives. Paradoxically, reflections emerged that insist in a forceful manner on the need to consider this unique situation as a magnificent opportunity to favour the didactic use of family time,

home spaces, climate change, among other topics. Obviously, neither the textbooks, nor the printed or digital didactic materials prepared beforehand had any activity or initiative related to the coronavirus among their contents, and which would facilitate the approach from different points of view. This section of the book contains several contributions related to the subject.

Teacher training. This is a set of contributions of enormous relevance in the framework of professional training and its relationship with teaching materials. It is necessary for training to encourage reflection on the use of materials and their meaning and significance in educational practice. It is also advisable to provide training that enables an analysis of the characteristics of the materials and that favours the analysis and interpretation of the digitalisation processes that are taking place in schools. An equally important aspect is the study of the necessary specificity of the functions and characteristics of teaching materials in the different disciplines. These and other questions are dealt with in the different chapters of this section.

Inclusion. In recent years this has been a highly relevant topic in the context of IARTEM initiatives and projects. In fact, a specific group focused on the analysis and role of socio-educational inclusion in teaching materials is in the process of being set up. Educational inclusion is nowadays very high on international educational agendas. The consideration of educational inclusion in educational reform processes requires a restructuring of the school curriculum, the training of education professionals, attention to organisational issues and, of course, consideration of the role of teaching materials in general in educational inclusion processes. Based on this concern and focus of interest, the book contains some contributions that bring together different visions and interpretations of the meaning and significance of teaching materials in the processes of educational inclusion.

Textbooks as a Riddle: Semiotic Pollution and Learning Challenges

Barbara Turchetta*

The research work is focused on the difficulties of interpreting study materials, aimed at elementary school students in Italy, with regard to scientific disciplines, particularly in the logical-mathematical area.

The active debate in the scientific community concerned with evaluating the quality of educational processes in school age has highlighted in recent years the need to enhance new technologies for more effective teaching, also aiming at an enhancement of knowledge through direct experience and observation of natural and cultural phenomena, for an improvement in pupils' scientific knowledge.

However, progress in pupils' learning and improvement in teaching methodologies have not been related to the impact that textbooks have precisely on the learning journey.

The research team composed of Alessandra Anichini (INDIRE), Pamela Giorgi (INDIRE) and Barbara Turchetta (University of Bergamo) focused attention on difficulties in school learning, linked not to a cognitive disadvantage or learning disorder of pupils, but to the quality of the teaching materials that are used as a reference for studying, practicing, and assessing learning.

More specifically, a consideration of the graphic layout of teaching materials and the density of information they contain can provide important insights that explain why in some cases, the learning process is hindered precisely because of the wrong layout of the illustrative images used to accompany scientific explanations.

Before delving into the interpretation of some particularly critical cases of teaching materials used in elementary school in Italy, it is necessary to reflect on some general properties of writing from both a semiotic and an anthropological point of view (Barton & Papen,

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2010). The writing systems that are present on a schoolbook are essentially of three different types: numerical systems, phono-graphematic systems more properly channelling languages, and iconic systems (Coulmas, 2002; 2013).

As can be seen in Figure 1, the co-presence of the different graphic systems is in frequent use, in public written communication, as in the case of commercial signs anywhere in the world.

The co-presence of three different graphic systems, however, involves a contextual decoding action on three different planes. The process of decoding and interpretation of meaning therefore does not take place following a linear path from one to the other, but contextual, since each of the signs belonging to the three codes, to be interpreted correctly, needs correlation with the other signs of the coexisting codes. In the figure at hand (**Fig. 1**), the Japanese writing is to be interpreted together with the meaning of the sign for the number 3 and the letters of which the interlocking letters indicating the name of a commercial chain (Q[uality] cut) is composed.

Figure 1. Example of three different graphic system combined.

The interpretive process for someone reading the information as a whole is complex and can be easily activated by an adult person with a high level of literacy. In contrast, the same kind of articulated cognitive process may be of some difficulty for a child in the early school years, for whom, on the other hand, a linear approach to written information may be more agile to access.

In this regard, it should not be forgotten that writing theory teaches us how languages and their writings respond to three substantive properties: the associative, the syntagmatic and the linear (Turchetta, 2017). In the history of writing, beginning with ancient scriptures, each piece of information, whether narrative, descriptive or logical, follows the linear process of processing ideas and through writing facilitates the elaboration of complex thought (Harris, 2000).

Looking precisely at examples from antiquity, we observe how in the Egyptian wall relief from the tomb of the dignitary Ti in Saqqara (5th dynasty) at **Figure 2** (2500 b.C.), the fishing scene is supplemented by short hieroglyphic inscriptions relating to the cries of the fishermen, placed at the height of the respective faces, following a linear dimension: each of the figures is close to the sentence related to him.
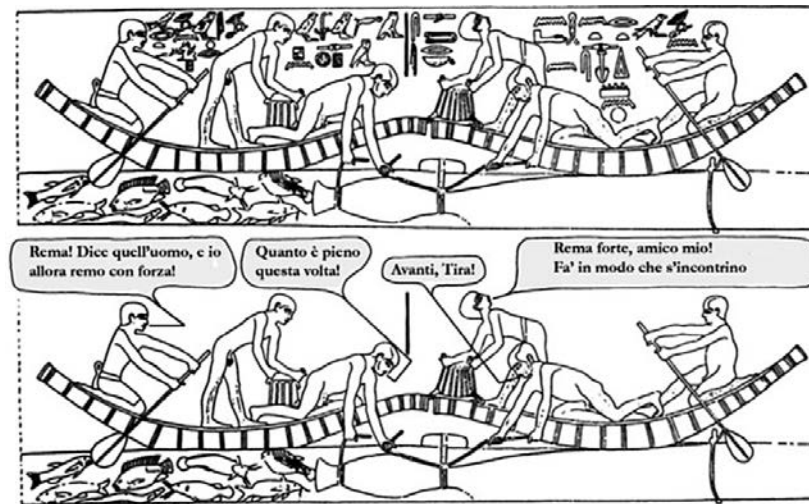
Figure 2. Example of linear process of processing ideas in the Egyptian wall relief from the tomb of the dignitary Ti in Saqqara (5th dynasty)

In addition, each script for its own language involves special attention to the shapes of the different graphemes or their size and again to the direction the hand takes in tracing the mark on the page (Goody, 1986).

Thus we have scripts that pay great attention to placing all the graphemes on the same line, as in the case of Latin script (**Fig. 3**),

scripts that provide for different directions that pay attention to the thickness of the lines, as in Chinese script (**Fig. 4**), scripts that instead focus the reader's attention on the length of the strokes and their size, as in the case of Arabic-Persian script (**Fig. 5**).
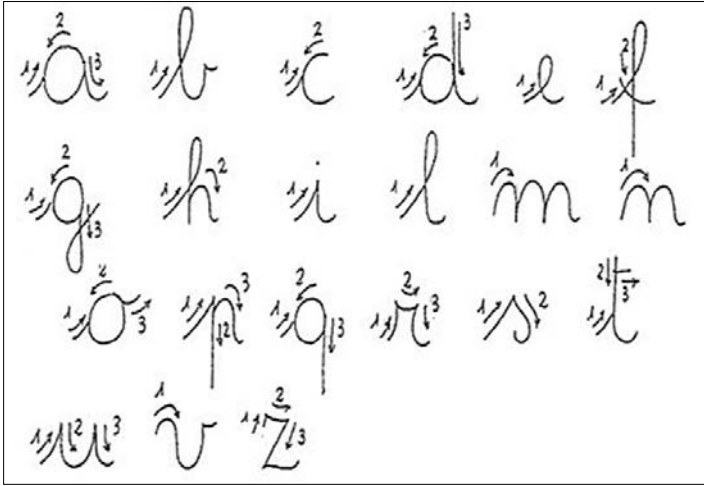
Figure 3. Latin script.
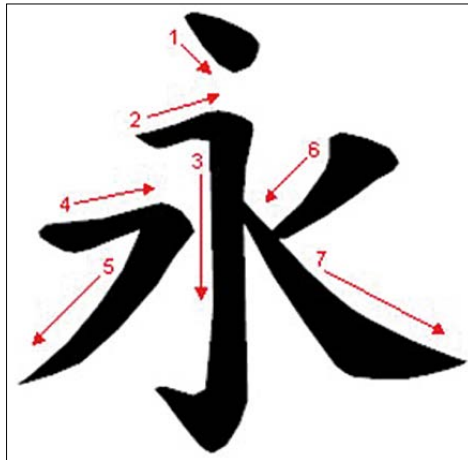
Figure 4. Chinese script.
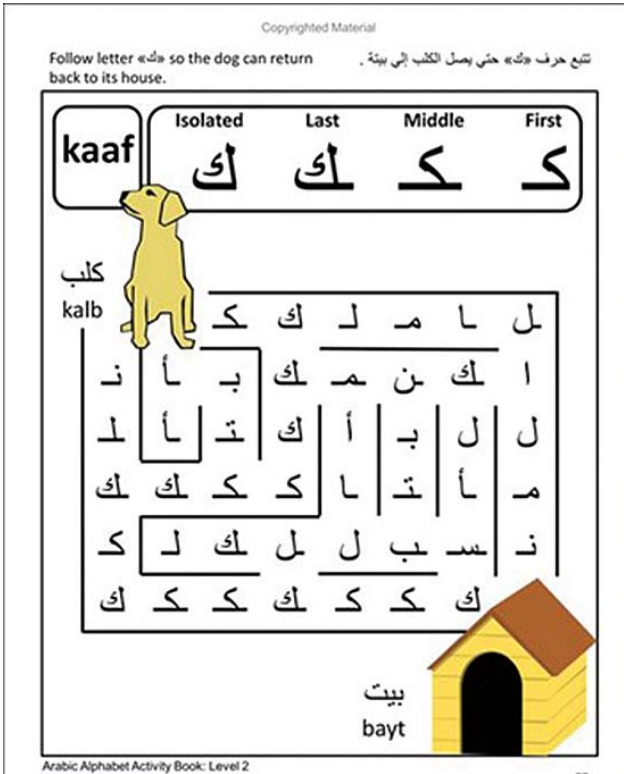
Figure 5. Arabian-Persian script.

Students in elementary school thus learn to observe, rather than reproduce, the different characteristics of writing for the language in which they are being literate and to respect the criterion of linearity, according to the direction proper to the writing they learn.

Looking at elementary school in Italy and with reference to the Latin alphabet, what an elementary school pupil expects on a page of his schoolbook is linear information, possibly easy to decode, in which any images can guide interpretation of the linguistic information through the written text. If we look at the page of a book dedicated to the fertilization of a flower for a fourth-grade elementary school botany lesson (**Fig. 6**), we observe a classic case of semiotic pollution, in which images of different type and size are accompanied by text with different fonts, different color and different complexity.
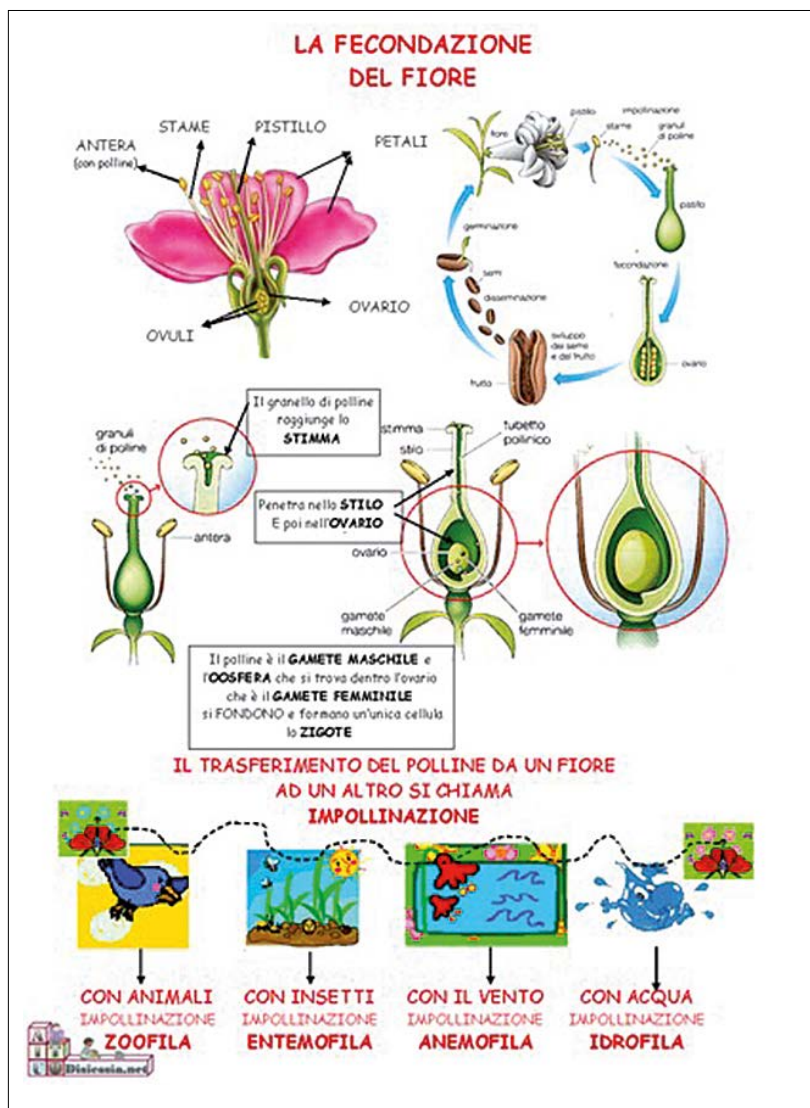
Figure 6. Example of semiotic pollution.

The page is broken down and forces the student to go through a very long process of decoding the meaning, with no guarantee of effective comprehension.

Concept maps often used to summarize complex scientific concepts are another frequent representation found in study books. In the following figure devoted to the geographic grid (**Fig. 7**) we see code mixing resulting in a loss of associative property.
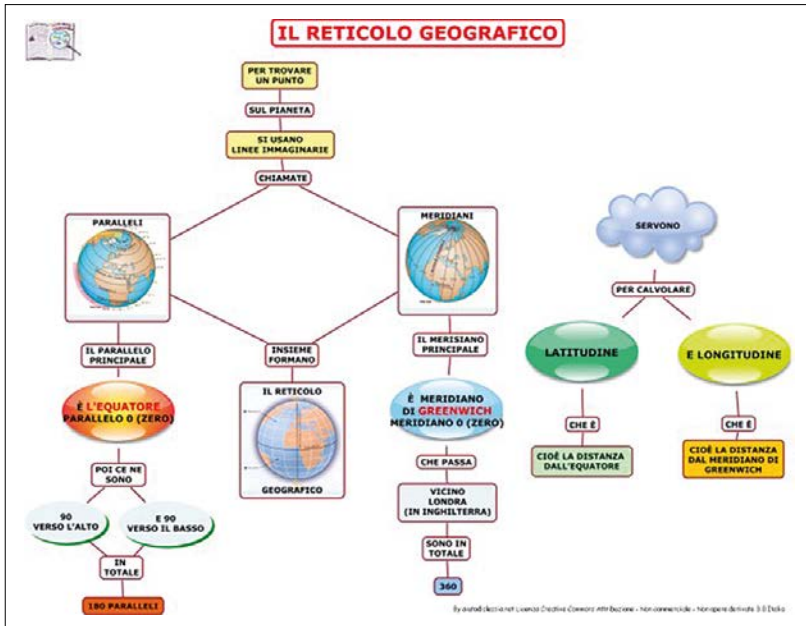
Figure 7. Example of code mixing.

The mixing of information is made more severe by the association of information that has no direct connection, as in the case of the cloud drawn on the right that contains a verb ('serve'), joined by lines that hold together technical information, such as latitude and longitude. At the end of the process of decoding the three semiotic codes at work, i.e., language, images, and geometric shapes such as lines, rhombuses, ellipses, the cognitive path the learner must take to understand what is on the page is really against every principle of agility and access to written information.

In conclusion, it would be useful to look more deeply into issues related to the graphic complexity of books that are published and used as educational tools and aids. Educational materials should be an agile reference tool, a support for learning and not an obstacle to natural and spontaneous cognitive processes.

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1.

DISCIPLINARY DIDACTICS – LANGUAGES

1.
A Comparative Discourse Analysis of Japanese Language Teaching Textbooks
Minna no Nihongo and *Marugoto*

FLÁVIO RICARDO MEDINA DE OLIVEIRA[*]

ABSTRACT

The goal of this paper is to report a comparative analysis between two textbooks widely used in Brazilian universities for Japanese language teaching, Minna no Nihongo *and* Marugoto. *The research is in the intersection between the fields of Dialogical Discourse Analysis (using as basis the theoretical framework of the Circle of Bakhtin) and Textbook Studies (with authors such as Escolano, Cuesta Fernández and Chervel). From these fields we utilize notions such as active response, ideology, cited discourse, implicit reader, and textual genres. The goal of our analysis is to verify what is possible to infer about the "idealized readers" of the textbooks, particularly the students, and to ascertain the dialogical relations between the textbooks and the notion of 'Japanese culture'. From analysis of* Minna no Nihongo *we infer that students have little or no room for responsive action, as both didactic activities and discourses are presented impositively. As for the* Marugoto *most of it offer little to no room for responsive action for the readers, but there is a shift in the direction of trying to involve students in discussions and interpretation, eliciting more complex discursive responses. At the same time, although Japanese culture is mostly presented also as a monolithic, static structure, a certain movement towards a view of heterogeneity and conflicts can be perceived.*

KEYWORDS: *Textbook studies; Japanese language textbooks; Dialogical discourse analysis.*

Introduction

With the largest population of Japanese descendants in the world and with the influence of Japanese culture both in traditional and in popular media, Japanese language is taught in a variety of contexts in Brazil.

According to 2017's "Ensino de língua japonesa – escolas e cursos: ensino fundamental, médio e superior" report, developed by the Japan Foundation (Japan Foundation, 2017), in that year there were close to 23,000 Japanese language students and 1,140 teachers in

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the Brazilian formal educational system – primary, secondary and universities. Those numbers did not account for immigrant founded and maintained community schools nor commercial language courses.

In particular, there are currently six universities with Japanese language graduation courses, five of which allow for teacher training. Also, in 2017 a total of 22 universities offered Japanese language curricular and/or extracurricular courses.

In this paper, we aim at examining two of the most widely used textbooks in Brazilian universities (also according to Japan Foundation, 2017).

Section 1 – Theoretical Framework

In the last decades, the academic interest in textbooks has grown, both in the fields of specific teaching (such as Math Teaching and History Teaching) and in various educational research areas (such as the History of Education, Teaching Methodologies and Didactics). Such fields naturally have each their own perspectives, theoretical standings, reference authors and so on, but in general it is possible to say that they have a few basis pillars in common: the textbook (in its various forms and media) is an object of the school culture; ideologies, curricular choices, methodologies, and the way "education" is viewed are condensed in them (Escolano, 2006, pp. 15-17). Furthermore, the ubiquity of textbooks as an identity-object of culture and educational institutions of literate societies is well-recognized, and for this reason they often are deemed as a "pedagogical invariant" (Escolano, 2006, pp. 17-19). Amidst this proliferation of research regarding textbooks, an academic area as a field in its own right ("Textbook Studies") has been advocated by several authors, such as Augustín Escolano Benito, Antonio Viñao Frago and Raimundo Cuesta.

Research within the Textbook Studies, by its nature, invariably approaches the intersection of other theoretical fields, such as Discourse Analysis, Semiotics, Applied Linguistics and several fields belonging to educational research (e.g., History of Education and Didactics). In this work, we explore an intersection between Dialogi-

cal Discourse Analysis (DDA), based on the contributions of the Circle of Bakhtin and Textbook Studies. For this purpose, we will refer mainly to two texts in the field of Textbook Studies, namely Escolano (2012) and Escolano (2006), while in the field of DDA, we will be using mainly Bakhtin (2003) and Bakhtin & Voloshínov (2009).

The first and most basic point of contact between Escolano's proposals and DDA is the realization that it is not possible to analyze textbooks (or any other text) out of their history. Citing Chartier (2006), Escolano (2012, p. 35) defends that no text exists out of the materiality it is inscribed on. This is well in accordance with DDA's view that all enunciates take place within boundaries of overlaying dialogues of various instances (Bakhtin, 2003, p. 294 and Bakhtin & Voloshínov, 2009, p. 117).

In that sense, one of DDA's main premises is that in no situation it is possible to 'isolate' an enunciator and a receiver in the sense that the previous is solely a producer and the latter, a reader: both are always, to some extent, readers and producers; when an enunciate is received, it elicits an 'active reply' – not necessarily verbal, but always an active reply. This establishes a relationship between either side called in DDA 'dialogic relationship' (Bakhtin, 2003, p. 354). This goes hand in hand with Escolano's defense that the users' (students', teachers' and others') processes of appropriation of the textbooks (and their related culture and graphic culture) are readings or rewritings which ultimately generate co-authorships of the texts (Escolano, 2012, p. 35). In this sense, Escolano shares with authors such as André Chervel, Dominique Julia and Antonio Viñao Frago (to name a few) the view that school culture possesses a certain level of independence and acts more as a 'producer of culture', rather than that of a 'reproducer of culture': it produces its own culture through its practices, regarding its demands and possibilities. That is not to deny (as we will also see later, in more detail) that school culture also plays a role in reproducing a variety of discourses which dispute space and power within its 'walls'. Yves Chevallard, for example, is an author who vehemently advocates the importance of schools transmitting academic knowledge ('savvy knowledge') in a process called 'didactic transposition' (Chevallard, 1998).

Both DDA and Textbook Studies also share in many senses the notion that texts (and in particular, textbooks) are produced and largely 'consumed' in a certain area of human activity (namely, school

culture) and thus develop their own set of characteristics which differentiate and characterize them in well-defined '(textual) genres' (Escolano, 2012, p. 35; Bakhtin, 2003, p. 279; Bakhtin & Voloshínov, 2009, p. 283). This includes but is not limited to strategies of diagramming, illustration styles, text visual organization, word choice and formality level.

Escolano also recognizes what he calls the 'implicit reader' of textbooks, as a constitutive part of their textuality and genre (Escolano, 2012, p. 35). Members of the Circle of Bakhtin postulate a similar notion as one of their most basic principles: when a speaker/writer produces and enunciate, the expectations about their 'social audience' (active) reaction, the image they carry of their recipient(s) ('ideal reader') and the perception that other public beyond the original may and will also have access and therefore also an active response to that enunciate (the 'thirds') mold this enunciate itself in a deep level, being one of its most important constituents (being part of the 'enunciate architecture'). These are all very complex notions, only mentioned here for the sake of brevity and can be found in passages such as Bakhtin (2003, pp. 320-321).

All these discourses, trying to find place within the boundaries of the textbook, may also be understood as 'cited discourses' – textbooks (as well as other texts) are often "enunciated about enunciates", "texts about texts". According to DDA, such cited discourses can be more or less opaque as to the fact that they are replying and/or incorporating other enunciates, according to their own interests (Bakhtin & Voloshínov, 2009, pp. 147-149 and p. 151).

Many of these principles can, in turn, be conciliated back to Escolano's realization that there exists a so-called "textbook police" (Escolano, 2012, p. 37) and that the editorial sector and dominant practices among teachers play a very heavy role in the development of a textbook (Escolano, 2012, p. 44). With this, Escolano recognizes that there are countless voices that dispute space in dialogical relationships in the sphere of school (formal) education. For him, the textbook is a device of cultural normalization, a concrete object containing 'acceptable' patterns for schooled subjects of a given time and place (Escolano, 2012, pp. 36-38). In DDA's terms, it is possible to say that the textbook is an enunciate common to a whole generation – which admittedly will not passively respond to it always in the same way, but nevertheless the mere notion of its ubiquity marks it as im-

mensely relevant, especially when we try to understand the processes of schooling in literate societies.

Section 2 – Methodology

Our objective in the work is to analyse the two most widely used Japanese language teaching textbooks in Brazilian universities (according to Japan Foundation, 2017) according to a combination of a few of the principals of Textbook Studies and DDA, as presented above.

These books are *Minna no Nihongo* (3M, 1998), used in five university teacher training graduation courses and in twelve other extra-curricular or non-obligatory courses; and *Marugoto* (Japan Foundation, 2014), used in 12 courses, including the entirety of the Japanese Without Borders program (a federal program designed to prepare Brazilian academic students for international academic events, interchange, and post-graduation).

In both cases, the first (basic) book was chosen, and from them, they first two units were analysed.

We divided our research questions (which compose in a way our 'categories of analysis') into two wider groups, each with more specific questions, as follows:

Responsive Action, Social Audience and Implicit Reader
– Is there room for multiple readings and interpretations?
– What is the space for responsive action from the interlocutors?
– What can be inferred about the idealized/implicit readers?
– What are the notions of right and wrong?

School Culture, Ideology and Cited Discourses
– What discourses are presented? Using which strategies?
– How opaque is the cited discourse?
– How is Japanese culture presented?

We took into account all activities from these books, including eventual texts, dialogues and/or information which did not have any specific or clear activity objective involved.

Section 3 – Results and Data Discussion

For the presentation of our results, we chose to first present all aspects of one textbook, and then the other, rather than compare them one by one, leaving a more overall comparison to the next section. We decided it would also be of value to present and shortly analyse the various 'types of activities' each textbook contains. Excerpts are already translated for brevity reasons, and no pictures are presented due to copywrite issues.

a) Minna no Nihongo

Introduction: Each unit has a single page containing an 'Introduction'. In practice, this page contains the 'Sentence Forms' (grammar points) to be practiced during that unit, as well as examples sentences containing such forms. As an example, the first unity brings (p. 6):

Sentence Form
1. I am Mike Miller.
2. Mr. Santos is not a student. (…)
Sentence example
1. Are you Mike Miller?
(…) Yes, I am (Mike Miller).
2. Is Mr. Miller a student?
Yes, he is (a student). (…)
There are no activities explicitly related to this Introduction.

Dialogues: Each unit brings a single 'Dialogue' section, in which a dialogue is presented. This dialogue is artificial in the sense that it was particularly designed for the textbook. They also do not contain marks of natural dialogues, such as variation of formality, marks of doubt, etc., and are very much examples of the Sentence Forms of that given unit. The characters presented in the dialogue are stereotyped as polite, helpful and kind; Japanese characters are eager to help and teach, while foreign characters are eager to learn and adapt.

Grammar Exercises: Each unit brings several pages of progressively more complex activities involving the Sentence Forms of that

unit, as well as a reasonably concise group of new words. These exercises have a single correct answer, usually pointed by the exercise itself, in a way representing variations of the typical 'fill in the blanks' classic. The freest activities allow for students to pick their own answer (favourite food, for example), but they are still supposed to answer using the exact given form. An example from unit 1 (p. 9):

3. Example: Mr. Miller; bank teller => <u>Mr. Miller is not a bank teller.</u>
1) Mr. Yamada; engineer => _____
2) Mr. Watt; German => _____ (…)

Oral Exercises (conversation): The oral exercises presented mimic the grammar (as seen above) almost to full extent, the main different being the media of the answer – instead of writing "Mr. Yamada is not an engineer", students are supposed to say that out loud. As the activities progress, mini-dialogues are provided, where students are supposed to swap single words making thus a 'new dialogue' (which is not really new, it is again a form of 'fill in the blanks').

Listening Exercises: Again, these are exact versions of the grammar exercises, but bringing auditory cues instead of writing or visual cues for the student to reply to.

Texts: The first two units of this textbook did not contain texts in the usual sense of the word. They start much later in the book, so they are not analysed in depth here, but briefly it is possible to say that they resemble the dialogues, artificial and stereotyped, and the only activities related to them (in the whole book) are true vs. false exercises.

Writing Activities: The whole book contains no instances of writing exercises.

Cultural Aspects: Although there are no specific sections for the presentation of cultural aspects, they can be seen inside dialogues (and later in 'texts'). They are, again, stereotyped – Japanese culture and people are kind, gentle, helpful, orderly and eager to teach.

Based on the presented above, we reply the research questions:

Responsive Action, Social Audience and Implicit Reader
– Is there room for multiple readings and interpretations?
No. All activities and the dialogues leave no room for any interpretation despite that intended by the book.
– What is the space for responsive action from the interlocutors?
Only that designed by the book authors.
– What can be inferred about the idealized/implicit readers?
Passive readers, adepts of repetition and logic. It is expected from them that they will reach fluency by repetition, memorization and by learning grammar rules.
– What are the notions of right and wrong?
Absolute. All answers have basically a single right answer, and 'mistakes' are not seen as learning opportunities.

School Culture, Ideology and Cited Discourses
– What discourses are presented? Using which strategies?
All 'texts' are artificial, designed with specific pedagogical intents and advocating specific worldviews with no room for different interpretations (as seen above).
– How opaque is the cited discourse?
Totally opaque. No external source is mentioned, not any external discourse is clearly presented.
– How is Japanese culture presented?
Monolithically, as a homogeneous 'block', with no nuances or social conflicts, through polished dialogues, highlighting positive aspects such as kindness, helpfulness and orderliness.

b) Marugoto

Introduction: Each unit starts with a mix of pictures, easy listening exercises (recognition only) and easy activities of exchanges between students (e.g., how do people greet each other in your country? Pp. 22-23). This Introduction serves both to introduce the general theme of the unit (greetings, family, food, etc.), vocabulary, as well as a few grammar structures.

*Dialogue*s: Not all units bring dialogues, but when they are present, they tend to be more aimed at exemplifying a given situation

(how to behave in a classroom, p. 27) rather than a given grammar point. Related activities involve listening and repeating or reading out loud such dialogues.

Grammar Exercises: There are no explicit grammar exercises – grammar is always practiced within the practice of other abilities, such as conversation and listening.

Oral Exercises (conversation): There are roughly two kinds of oral exercises present in this textbook. One of them is very straightforward, where students are supposed to just repeat or replace offered samples with other words. But there are also freer activities, such as asking classmates about their families (pp. 38-39).

Listening Exercises: In a similar fashion to Oral Exercises described above, this textbook brings both listening activities with no room for variation in answers (e.g., recognition exercises), while also a few activities where students have more freedom to reply.

Texts: There quite a considerable variation of genres of texts in the book, and not only the typical 'block of words'. The first unit, for example, brings shop signs, magazine covers and newspaper articles, while unit two brings business cards. There is a variety of activities related to these texts, such as identifying their parts or introducing yourself according to a certain name/business card.

Writing Activities: Units one and two do not bring writing activities. Further on in the textbook, a few can be seen, usually reproducing some text genre presented in that unit (such as writing your own birthday card).

Cultural Aspects: Japanese culture is presented basically throughout the book – in pictures and illustrations, through different text genres and in dialogues. The book also brings at the end of every unit a "Life and Culture" section, where some cultural aspect is explicitly discussed or presented. Unit one discusses honorific words (and indirectly matters of hierarchy in Japanese society), while unit two presents how Japanese people treat their own family differently to other people's families. In this section, students are also stimulated

to discuss how such cultural aspects are seen/performed in their own countries.

Responsive Action, Social Audience, and Implicit Reader
– Is there room for multiple readings and interpretations?
Most activities do not. But texts and a few activities are more open and do leave it for the students to discuss and negotiate meaning.
– What is the space for responsive action from the interlocutors?
Again, most exercises do not leave much (or any) room for active response, but there are exercises where students are stimulated to compare answers, answer together or come up with their own replies.
– What can be inferred about the idealized/implicit readers?
Both students who like grammar and practise, and those who prefer freedom in communication attempts are somewhat catered for. The classic sequence 'input – practise – output' is present throughout the book.
– What are the notions of right and wrong?
Once more, most exercises expect a single answer (or answers with a single format, filled in with the students' information). However, in each unit there are a few exercises without 'right answers', where 'mistakes' are clearly an expected part of the learning process.

School Culture, Ideology and Cited Discourses
– What discourses are presented? Using which strategies?
Both authentic and artificial texts are presented, leaving some room for discussion for students to interpret them according to their own worldview.
– How opaque is the cited discourse?
Very opaque. Though it is usually possible to see when a text or discourse is external, there are no references or any contextualization as to where it was taken out from.
– How is Japanese culture presented?
Mostly as positive, although 'novelties' and 'social discrepancies' can also be noted (such as the extensive use of foreign words in everyday life in Japan, unit one). Also, especially during the "Life and Culture" section, students are stimulated to confront Japanese culture with their own and discuss it with their classmates.

Conclusions

Both textbooks, despite with a very clear visual identity difference and over a decade of distance of their publishing, have several similarities. Both of them bring and extensive array of activities with single answers and expect students and teachers to follow their 'pre-ordained' path without much questioning. We argue that this puts school culture in the position of a reproducer of culture much more than that of a producer.

They largely favour repetition and memorization, although *Minna no Nihongo* does so in a much stronger fashion. Both books highlight positive aspects of Japanese society, leaving nearly no space for students to see that it is, like any other society, full of contradictions, conflicts, and heterogeneity. The characters presented are mostly shallow and stereotyped, representing idealized images of Japanese and foreign people.

With this in mind, it is possible to see a certain thread that links both textbooks – in terms of genre, activities (methodology) and ideology (the presentation of culture). This may be related to the fact that neither book is detached from the reality they were produced in, following the principles of DDA and Textbook Studies: Japanese language teachers (and students) have certain expectations, and the practice of how it happens in schools (be them universities or community schools) in certain ways dictate largely what can be accepted. As with all enunciates, these textbooks are responding to the needs and demands of their interlocutors, teachers and students, all the while bringing external discourses to be (actively) responded by them.

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2.
Teachers' Guide Landscape.
The Subject Danish (L1) as an Example

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ABSTRACT

Studies show that more than half of all Danish L1-teachers use didactic learning materials in more than half of their teaching time and that teachers make use of a variety of materials both digital and analogue. Learning materials often come with written guides for teachers on how to understand and use the materials which we define as teacher's guides; texts directed at the teacher guiding the use of a didactic learning material. These informative and instructive texts as the teacher's guide are therefore assumed to play a role in the teaching that unfolds in practice in the classroom and as learning resources for teachers. Teacher's guides can also assign the teachers as either performer of the prescriptions of the curriculum or as a subject professional who must engage in dialogue with and reflect on his/her subject. We find that in general, teacher's guides for digital learning materials are scarce and seldom invite teachers to reflect on their role. In analogue materials teacher's guides are solid and well-argued and sometimes invites the teachers to reflect upon their role. More studies should be carried out to investigate teachers' actual use of teacher's guides.

KEYWORDS: *Teacher's guides; Danish L1; Didactic learning materials.*

Introduction

A recent Danish quantitative study on the use of didactic learning materials for Danish L1 teaching shows that didactic learning materials are widely used in the subject of Danish (Bundsgaard *et al*., 2020). A case study with 25 lesson observations in different 7th grades in eight schools shows that Danish teachers use both analogue systems, digital subject portals and various stand-alone resources. The stand-alone resources are such materials as PDF sheets with tasks found on the Internet and didactic resources that support teaching with semantic

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learning materials (e.g., young adult novels). Besides, the study found that the learning materials in many cases serve as a starting point for teaching rather than guiding the teaching (Gissel *et al.*, 2021). Studying learning materials and their teacher's guides thus seems to be important to understand what is going on in Danish classrooms.

This study focuses on the subject Danish L1. Danish is a compulsory subject in primary school, running from 1st to 9th grade. Measured in terms of minimum hours, Danish is the most voluminous subject in the primary school curriculum, with 330 lessons of Danish per year at first level and 210 hours at the final level.

All subjects in the Danish primary school are regulated by the national curriculum Common Goals [Fælles Mål]. The overall goals are broken down into more than one hundred smaller knowledge- and learning goals, but since 2019 these are no longer binding. Danish L1 is mandatory throughout the 'folkeskole', the mandatory schooling in Denmark consisting of ten years of schooling in grade 0-9 while grade 10 is voluntary. The schooling is separated into levels called beginning level for grades 1-3, intermediate level for grades 4-6 and lower secondary level for grades 7-10.

Teachers have the so-called "freedom of methodological choice" in their teaching meaning that they can select the learning materials, content and teaching methods that they consider best for their students, the content they teach and their views on the subject and learning theories.

The market for learning materials in Denmark is largely unregulated are distributed for free to teachers and students since municipalities are responsible for purchasing learning materials for schools. Teachers do have influence on the purchase of learning materials although the propagation of the digital subject portals, covering all subjects on all grade levels, have led to less influence. In a recent survey (Styrelsen for It og læring, 2021) 36% of teachers expressed that they have little or no influence on the selection of digital learning resources. However, Danish teachers seem to have more influence on the acquisition of analogue materials (Bundsgaard *et al.*, 2020). Most learning materials are produced by private publishers and for the subject Danish L1 many options are available for all levels (Bundsgaard *et al.*, 2020).

Analysing texts using document analysis has traditionally been done in the research of learning materials (Gissel & Buch, 2020) re-

vealing the potential didactical potential (Bundsgaard & Hansen, 2011).

The type of learning material has an impact on how representative an analysis of selected parts of a material can be. Thus, in a paper material, there will typically be a high degree of uniformity from course to course, whereas there may be large differences between courses on a digital subject portal, a Danish type of learning resource that acts as a repository of courses to all subjects and grade levels from which teachers can choose. Therefore, for the sake of transparency and the possibility of assessing the generalisation potential, it is important that each analysis records which parts of the learning material have been analysed.

Subject didactic view and underlying learning theories are central to assessing the extent to which the material can provide in-service training for teachers in presenting subject didactic approaches and learning approaches. Furthermore, these two parameters can be seen as indicators of whether the learning material invites the teacher to reflect on how the subject and curriculum can be translated into teaching, or in Remillard's (2012) terms: whether the learning resource speaks *to* or *through* the teacher.

Since teachers in Denmark have freedom of method, they have a great deal of freedom in terms of how the binding objectives of the curriculum are to be reached. Thus, teachers have the freedom to select content and choose pedagogical methods. Consequently, didactic learning materials will constitute the learning material producer's suggestion for how to translate the curriculum into teaching. Therefore, it is important to investigate the curriculum represented in the teacher's guides.

Hansen (2010) distinguishes between didactic learning materials with a high and low degree of didactisation. A high-didactisation learning resource is characterised by concrete goal-setting that is specifically linked to themes, subject matter, tasks, activities, and teaching methods, which translates into fully developed teaching programmes in the student section of the material. The teacher's guide structures the teacher's use of the resource. Thus Hansen (2010) describes a close correlation between the coverage of the teacher's guide in terms of which basic didactic functions the teacher receives inspiration and guidance for and the degree of didactisation in the student-oriented texts. Thus, a highly didacticised

learning material will operationalise many of the didactic functions mentioned.

Investigating these aspects of teacher's guides will reveal the didactic potential of teacher's guides and to which degree they support teachers or invite them to reflect on important didactic questions.

The research questions of this paper are:

What didactic potential do the teacher guides to the most widely used teaching materials in Danish primary schools in the subject of Danish (L1) contain?

Do the teacher guides invite the teacher to didactic reflections on key didactic issues?

Method

This project is a part of a larger study focusing on design and use of teacher's guides in the subject disciplines of History, Knowledge of Christianity and Danish carried out by the National Centre of Excellence for Learning Resources Denmark. In this paper we present a study of the design of teacher's guides in the subject Danish.

The three analogue materials and seven digital materials analysed were all among the most used learning materials in the survey study from 2017 and they cover the three levels in the Danish school (Bundsgaard *et al.*, 2020).

Teacher's guides are analysed using document analysis. The analysis focuses on several aspects.

1. *The kind of learning material.* For each analysis, the title, grade level, whether it is an analogue or digital learning tool, and the type of learning material are recorded.

2. *Explicitness of the subject didactic view or learning theories.* To further elucidate the teacher guide's positioning of the teacher, we examined how the focusing on invitations to teachers to reflect on the tasks, subject content, didactic choices and view on teaching and learning.

3. *Positioning of the teacher and connection to the National Curriculum.* We also investigated whether the guides make explicit the purpose of the proposed teaching as well as how the curriculum is articulated in the teacher's guide. For example,

are the curriculum objectives presented as something to be implemented or something given? Does the learning material present itself as an interpreter of the curriculum or as a direct consequence of the curriculum's intention?

4. *Degree of teaching support.* This theme regards the support given to teachers in planning, organizing, differentiating, evaluating and providing progression of the teaching. We score each learning material as having either high, medium, or low didactisation. This allows us to compare the degree of didactisation in the teacher and student parts respectively, and thus to uncover any discrepancies or similarities between the degree of didactic coverage in the teacher and student parts. In the present paper, we focus separately on teacher guidance and solely on the subject of Danish L1.

Each of the selected learning materials' teacher's guides were analysed and scored by one researcher following a scheme created on the background of the above themes. Four researchers participated in the scoring and analysis. Scorings were discussed among the four researchers after the initial score and scores were then corrected according to the group's decisions.

Results

In this paper, we present the details of our findings vis-a-vis the national curriculum, organization of the teaching process, progression, and differentiation and how teachers are invited to reflect on didactic themes. First, we present the results from analysing the guides for the paper books (analogue learning materials) and then the findings from analysing the guides for digital learning materials.

The analogue materials are highly didactizised learning materials. They all come with thorough teacher's guides including solid and well-argued descriptions of the didactic theory and goals while the learning theoretic starting point is implicit. They all have rather comprehensive teacher's guides including a more general part describing the theoretical and pedagogical basis for the materials. They also in-

clude page-by-page guides or guides specifically for each theme in the material. Two of the materials do not seem to have explicit views of learning, but the paper books do have implicit views in the way teaching is suggested. They are all very explicitly connecting to Common Goals and the knowledge- and learning goals. They have lists showing these goals and very often we see that each theme has an explicit overview over which of the goals are covered in the theme in the book.

We find that they all seem to have a high degree of being didactizised. Still, we do see great differences. For instance, there are no instructions on the organising of the teaching in all the materials for intermediate and lower secondary level. Some materials do have instructions on how to differentiate between students according to their level of proficiency while others do not. Some materials give instructions on how to evaluate and others do not, and some materials give instruction on what should be the most important content to make sure, the students learn, and others do not. One material explicitly points out that teachers should follow the teacher's guides precisely leaving as little freedom to the teacher as possible.

Digital materials seem to have less teacher support.

On the contrary, the digital materials seem to have shorter teacher's guides with a less explicit didactic and learning theoretical starting point though some of them implicitly suggest this.

The views on learning are also very vaguely described and often non-existent. This counts for all the digital materials although we do find the learning view being 'social constructive' in some materials. All the materials connect to the Common Goals and are explicit about this and often describe the connection very clearly. The digital materials seem to be more explicit when it comes to didactisation and they often have principles for organising the teaching and securing progression and connection between the content, for example by following the annual plans prepared for the teachers in the materials. They also give instructions for evaluation and differentiation. The digital materials are less organized, and themes are organized in a side-by-side structure that teachers can choose between. They seldom support the teacher in redidactizising the materials, i.e. adapt the materials to suit their specific context, and instead they support the organising of themes by readymade annual plans. Differentiation for the students is found in the digital materials, although often on the more overall level

than directly in each theme. This differentiation sometimes focuses mostly on how to support students with reading challenges.

Discussion

Many digital materials are newer than the analogue materials that might have existed for many years. At the same time, we see that digital learning materials are becoming more and more popular, or, at least, they are being used more and more. This means that the tendency is that teacher's guides are becoming smaller in scope and less informative, taking no stance in either the didactic or learning theory landscape. In this way, they leave it up to the teachers to find their own stance. We do not know why we see this tendency. One explanation could be that most digital materials are often made by several different authors and therefore they do not express any point of didactic view. Often, digital materials are also renewed and can be up-dated easily. This means that leaving out a didactic or pedagogical stance makes it easier to shift position from one theme to another or over the years. On the contrary, analogue materials are made all at once and are thought through from the beginning. They are not supposed to be up-dated in parts and therefore they can be more explicit in their didactical point of view. The authors(s) of such materials know the whole content of the book and will often have aligned their didactical views before writing the book.

Digital teacher's guides are closely connected to the national curriculum and their Common Goals. This might be explained by the easy way they can be updated. If these goals change, which they have done quite regularly in Denmark, they can easily be up-dated in the online teacher's guides. In the analogue teacher's guides this will be a difficult process and the analogue material will often become out-dated if they contain Common Goals that are no longer in use.

Conclusion

Summing up, we find that the teacher's guides for analogue materials support teachers in understanding the didactical choices in the

material and that they also have a clear line throughout the whole book. Contrary to this, digital teacher's guides seldom have a clear didactic theory. In this sense, their didactical potential is looser. Analogue materials have explicit support for the teachers' organization of their teaching, often using page-by-page explanations or other tools to support teaching. Digital teacher's guides have shorter and less explicit support.

We therefore conclude that the teacher's guides for the analogue materials have a higher didactical potential than do the digital teacher's guides.

Both types of teacher's guides do not invite the teachers to reflect deeply on the didactical choices, but the analogue materials do have more explicit and clear point-of-views didactically.

On the other hand, digital teacher's guides are often closer connected to the national curriculum than the analogue materials.

The digital teacher's guides in general are vague and scarce and do not invite the teacher to reflect over content, didactics, progression, and organisation of the teaching, still these learning materials are very popular in Danish primary and lower secondary education. We find it worrying that we see a clear tendency towards minimalist teacher guides on virtually all the parameters we examined in the digital learning materials, as Danish teachers' use of digital learning materials is extensive. What implications does this have and what do teachers prefer? Teachers' opinions on teacher's guides should be investigated further. Although we see an explicit subject in guides to selected analogue materials, it does not unfold as an open invitation to dialogue. In these cases, it is mostly a case of the author arguing for the didactics of the material, whereby the communication cannot be seen as an invitation to reflection and dialogue with the teacher. Our study thus points to a need for research into what a teacher's guide that can function as an initiator of teacher reflections on key didactic issues might look like.

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3.

Beyond Textbooks: A Focus on Students' Digital Competences in the English Class

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ABSTRACT

The aim of this research is to investigate some aspects of English textbooks for Italian lower secondary schools such as digital resources, presence or lack of transversal competences sections in order to check what course-books are suitable for the new education challenge. On the other hand, it wants to test the learners level of autonomy of study in digital environment. The methodology was inspired by action research, qualitative approach and data collection through questionnaires and semi-structured interviews to check the relationship between students and digital didactic tools. Participants were recruited among students and teachers in an Italian lower secondary school. Final results show that young students are not autonomous in using online materials as well as in developing competences so the role of teachers is still required, in particular, during and after the Covid-19 pandemic.

KEYWORDS: *Learning; Transversal competences; Digital tools; Distance learning.*

Introduction

"In recent years, digital media and networks have become embedded in our everyday lives, and are part of broad-based changes to how we engage in knowledge production, communication, and creative expression" (Ito, Mizuko *et al.*, 2008, Forward, p. VIII).

This definition about the role of digital media and networks is quite interesting because it stresses that they have become embedded in our lives. Digital media can be seen everywhere and they are widely used in different fields like marketing, communication and education which is the area this research is about to discuss. A generation is growing up in an era where digital media are pervasive and commonplace. This is particularly true for adolescents who are the target of this research.

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In 2001 Marc Prensky proposed the term "digital natives". In his famous article 'Digital natives, Digital immigrants' (Prensky, 2001) the scholar argues that "(t)oday's students have not just changed *incrementally* from those of the past, nor simply changed their slang, clothes, body adornments, or styles, as has happened between generations previously". What is the epochal event is "the arrival and rapid dissemination of digital technology in the last decades of the 20th century".

Literature stresses that boys and girls born in the mid- to late-1980s and the 1990s can be labelled the "Internet Generation". "Surveys show that this generation (sometimes also called the 'Net Generation', the 'Net-Gen', 'Generation I', the 'Digital Generation', or the 'Millennials') socializes more online, downloads more entertainment media, and consults the Web for a wider range of purposes than do present adults or young people of the previous generation" (Herring, 2008).

Consequently, we cannot deny that these digital students have acquired new skills like printing documents, online gaming and downloading which did not belong to students born thirty or forty years ago. If it is true that digital natives can google fast, they are lacking in some key and transversal competences like *learning to learn*, *entrepreneurship* and *cultural expression*. The last ones belong to the well-known eight *key competences for lifelong learning*, a framework developed by the European Union to respond to the changes in society, labour market and private life of the EU people.

In 2018 the Council of the European Union has adopted some recommendations in order to support and strengthen its citizens' education. Such recommendations have been included in all the European schools' manifestoes; even if they are not compulsory, Member States are encouraged to promote them for different reasons that can be read in the official files. For instance, the European Union claims that "everyone has the right to quality and inclusive education, training and lifelong learning in order to maintain and acquire skills that allow full participation in society and successful transitions in the labour market" (OJ 2018/C 189/01). Also, "competence requirements have changed with more jobs being subject to automation" and technologies. Finally, "new ways of learning need to be explored for a society that is becoming increasingly mobile and digital". All these things considered, the eight key compe-

tences have been designed for a new society and for a new group of learners.

Digital literacy is closely related to one of the recent Sustainable Development Goals (SDGs)[1]. Goal 4 deals with Quality Education. Before the Covid-19 pandemic, the idea of digital literacy was linked to some competences that students had to achieve like creating a power point presentation or surfing the internet for a school project. The outbreak of the 2020 pandemic, instead, together with the gradually global school closure, has been pushing students to adapt to online learning[2]. Consequently, their digital literacy has moved from a passive role like watching videos or gathering information about a topic to engaging in online lessons, sharing files in virtual classes and other online activities. It is true that such shift from a *passive* to an *active* digital competence can be listed as one of the positive effects of the pandemic; but, on the other hand, some differences have emerged among students such as socioeconomic status; parents educational level; gender and race and disposal of devices (Di Pietro *et al.*, 2020).

In Italy as well as in other countries, teachers and students had to face the gradual school closure. An interesting report led by the OECD in 2020 (Organization for Economic Co-operation and Development) "(…) aims to bring together evidence from various OECD school education surveys conducted prior to the crisis and use it to examine how prepared teachers, students and schools were in Italy to face the impact of the COVID-19 pandemic" (Source: OECD 2020. *School Education During Covid-19. Where teachers and students ready?*). The OECD report says that Italian teachers were quite prepared to move from a traditional, face-to-face didactics to a virtual one. Also, 52% of teachers reported that the use of ICT for teaching was included in their formal education or training.

Summing up, the absence of in-person education during the Covid-19 pandemic in Italy has opened a new scenario in which it is clear that digital competences have been strongly necessary in order to face the school closure due to the global health emergency, but the role of teachers cannot be replaced. The widespread idea of several Italian students is that, during the hard time of the pandemic,

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[1] See the website https://sdgs.un.org/goals.
[2] United Nations, *Policy Brief: Education during Covid-19 and beyond.*

teachers supported them and engaged them in keeping reaching their learning goals.

The main research questions have been:
1) How deep is the presence of digital competences in English textbooks for Italian lower secondary school learners?
2) Are students aged between 11 and 13 accustomed to use the Internet and other online resources for their learning?

Methodology

This section introduces the methodology used for the present research. The principal methodology is action research. "Action research is the name given to a series of procedures teachers can engage in, either because they wish to improve aspects of their teaching, or because they wish to evaluate the success and/or appropriacy of certain activities and procedures" (Harmer, 2015). Action research paradigm allows the researcher to see the issue through perceptions and experiences of the people involved in the participation of the research.

Data Collection

Formats, questionnaires and semi-structured interviews were the main research tools. The sampling was a group of ten Italian teachers teaching English as a Foreign Language in public schools in Italy. They were both male and female, aged 40 up to 55. Another sampling was 60 students aged eleven to thirteen attending an Italian lower secondary school. They were 27 Italian boys and 33 Italian girls belonging to the middle-class. Ten out of sixty were born in Italy but their families came from Romania.

Mc Millan and Schumacher (2010) describe sampling as a group of participants from whom the data is collected. There are two types of sampling: a) probability sampling, when participants are selected randomly; b) purposive sampling, when participants are carefully selected regarding a specific research area. Such purposive sampling was based on students with high school performances (marks, daily

participation in the school life and so on) as well as an adequate critical thinking. It resulted appropriate due to the nature of this investigation as it explores the perceptions of students.

In addition, a qualitative approach has inspired the data collection. Many scholars like Denzin and Lincoln (2000) stress that qualitative research allows the researcher to study things within a natural habitat, attempting to understand or interpret phenomena in terms of the meaning people bring to it.

The format (see **Appendix, Table 1**) has been given to the teachers for investigating hypothesis 1. Another questionnaire (**Appendix, Table 2**) has been given to all the 60 students in order to find data useful for hypothesis 2. The questions are both open questions and yes/no options in order to allow the interviewees more freedom to express their opinions. All participants were recruited on a voluntary basis. In addition, the data was collected in anonymity.

Research Questions

In order to investigate hypothesis 1 (RQ1), a team of ten teachers teaching English as Foreign Language (EFL) was recruited. Teachers had to complete a specific format that is available in Appendix 1. The format was inspired summing up some of the most relevant criteria discussed in literature (Tomlinson, 2009).

Textbook is the main learning material for students. The Italian Ministry for Education considers textbooks as the principal component of the students curriculum. The national educational system in Italy indicates the syllabus for teachers to follow by teaching a certain subject. However, teachers are free to select one or more than one textbook from a number of competitive publishers. They decide to adopt a textbook if it is in compliance with some criteria such as the accessibility of its content, its methodology and so on. What is relevant here is the importance given to transversal competences. Teachers had to look at different textbooks. More precisely, they were EFL textbooks for Italian students attending lower secondary schools. The full list of the textbooks to be analysed is the following:

a) Foody E. *iDiscover*. Pearson. 2021.
b) Mauri B. *My Way*. Giunti Scuola. 2021.

c) VVAA. *Think Big*. Oxford University Press. 2021.
d) Greenwood A. *et al. And you?*. Petrini Editore. 2020.
e) Bowen P. *et al. High Five*. Oxford University Press. 2014.
f) Bowen P. *et al. Step up*. Oxford University Press. 2018.

Finding and Discussion for Research Question 1

These findings feed on the views and thoughts of the participants involved. Analysing the first EFL textbook *iDiscover* these data emerged: 100% said that it is a communicative based textbook; 80% said that it is a task-based one. 60% of the teachers emphasized a problem solving framework. 20% noticed that a recent methodology is also present in *iDiscover*, that is, 'see, think, wonder'. All the participants said that the textbook is user-friendly and its graphical elements are interesting and colourful (100%) but only 6 out of 10 declared that it is teenager friendly (60%). Regarding the digital format, all the people said that it has many digital resources like CDs and QR codes to explore videos, maps etc.

Among the open answers, one seems to be interesting. "KmZero is an online platform, that is, a sort of archive where you can download different stuff for your students. It is always updated and open". The publisher Pearson created this platform during the Covid-19 pandemic to support teachers and students in distance learning times. This quote reflects a positive attitude towards the digital tools offered by *iDiscover*, and it is in accordance with other open answers collected by the researcher.

The second textbook is *My Way*. 50% of the people said that it is a cooperative based textbook whereas 30% said that it is a task-based one. Another methodology noticed here is the grammar-based one for the 20% of the participants. All the participants said that the textbook is not user-friendly (0%) and its graphical elements are quite simple and too serious (100%); there are few photos and some of them tend to be too childish. Regarding the digital package, teachers said that it has an acceptable number of digital resources.

Think Big is the third textbook to be judged. According to the participants, this textbook has many pros and it is one of the best for lower secondary school students. All the people stated that it has

an attractive design, full of colours, big pictures and sparking letters (100%). It is well equipped with digital resources like the ones mentioned before (QR codes for fast links, videos and audios, e-Book etc.). There is a strong emphasis on many transversal competences like global awareness (60%), project management (70%), learning to learn (50%). Regarding its methodology, teachers affirmed that *Think Big* has a solid methodological framework which includes the communicative approach, task-based learning and problem solving (80%). Furthermore, interviewee 3 confirmed this statement: "*Think Big* is an extraordinary textbook because it dynamic, it focuses on the whole learner developing good thinking habits and communication skills". This statement comes in agreement with the general results that put *Think Big* among the best textbooks for young students.

And You? is another recent textbook published in 2020 for lower secondary school students studying English as Foreign Language. This textbook stresses the 21st century competences, that is, the eight key competences for lifelong learning, life skills and the 4Cs. It is quite user-friendly and its graphical elements are quite interesting and colourful (90%).

The penultimate textbook is *High Five*, the oldest in the group because it was published in 2014 but it is still adopted by many teachers. Here communicative approach is predominant; 70% declared that cooperative learning is also widely present in this textbook and flipped classroom methodology too (50%). Other people (50%) noticed that there are many CLIL sections and reality tasks (*compito di realtà*) too.

To conclude, *Step up* is the last English textbook reviewed. Analysing the last EFL textbook all the teachers supported the view that *Step up* is well equipped with materials for SEN students. Regarding the digital format, many participants declared that it has many digital resources like CDs, videos, online maps etc. Finally, 80% of the participants answered that this textbook stresses cultural expression as the main transversal competence.

Conclusion for Research Question 1

Summarizing the data collected for Research Question 1 "How deep is the presence of digital and transversal competenc-

es in English textbooks for Italian lower secondary school learners?" the research has highlighted that the best English textbook for lower secondary school with an emphasis on learners' transversal competences is *Think Big* for two reasons. On one hand, *Think Big* is a recently published course-book so it is updated to the last frameworks both in terms of methodology and competences. On the other hand, it has many transversal competences as stated before. Among them, social interaction is very important and this textbook emphasized a lot on it. Pupils learn also from their peers and some peer-to-peer activities and group works can build knowledge.

Transversal competences that can be taught in the English class are interpersonal like collaboration, positive attitude and teamwork as well as civic competences like social justice issues. Teachers can promote the acquisition of knowledge and skills essential to global mindedness and social justice (Nganga, 2019). English classes can be seen as precious moments to appreciate commonalities and differences among cultures; to clarify misconceptions about the other peoples; and to be engaged in pressing problems of our times like immigration, poverty, global warming etc.

No course-book is totally comprehensive, this is for sure. However, it is one of knowledge sources which is the easiest to obtain and becomes one of many aids to assist the students in acquiring clear concepts of subject matter (Pusporini, 2009). According to O'Neill (O'Neill, 1982), textbooks can act as a reference point for the students learning process and keep track of their development.

Finding and Discussion for Research Question 2

The second research question (R2) is the following:

Research Question (R2): are students aged between 11 and 13 accustomed to use the Internet and other online resources for their learning?

It deals with learners' attitude toward educational media. In particular, it tries to understand if they feel autonomous in using software and other media for their education or if they want the help of an adult such as a parent, a teacher or a tutor.

The research tools are based upon participants views and opinions. Anonymous participants had to answer to open questions and semi-structured questions available in Appendix 2.

In Question 2 *Have you got a computer or laptop?* 90% of participants answered that they have got a computer at home. 45% said that they have got more than one computer at home or at their parents' offices.

In Question 3 *Do you share this computer with other people of the family?* 60% of participants answered that they share it with other people like siblings or parents. Someone said that during the 2020 school closure due to the pandemic two or even more people in the same family had to use the same computer for online lessons and smart working.

In Question 4 *Have you got other devices like iPad, tablet etc.?* 75% of the interviewees answered yes. The most common device is tablet for the majority of the participants.

In Question 5 *How many hours per day do you use your devices?* 50% of the people answered that they use such devices more than two hours every day. Some teenagers (30%) said even six hours per day, especially after dinner when their parents are sleeping and they cannot be seen. This data seems to be alarming about the lack of awareness from the families.

In Question 6 *Why do you use it/them?* 85% of the participants answered that they use computers for pleasure only. Playing videogames is the commonest activity, chatting on social media is also popular. Only a minority (25%) declared that technology is useful for studying too.

In Question 7 *Have you got e-Books?* 15% answered yes; 85% answered no. Few people said that these e-Books substitute school textbooks whereas a very small group of people declared that e-Books are read in free time.

In Question 8 *Do you know that there are online resources for the subjects you study?* a huge number of participants (50 out of 60) answered that he or she knows there is a plenty of online resources but studying on it is chaotic.

In Question 9 *Can you write one or more names of website you use for studying like online encyclopedia, online tests for self-evaluations etc.?* participants wrote the following names: Google and Wikipedia (90%); random websites (70%) that deal with an issue was another

popular answer. Instead, there were no answers for online tests for self-evaluations. Some of the participants declared that "this is not my business" meaning that they wait for a text created by the teacher. Other people (45%) answered that YouTube is a good resource because they find a lot of videos and explanations about different topics. These data stress that there is a superficial knowledge of academic websites and premium digital resources since learners tend to follow the guidance of a teacher. He or she is the one that suggests them what are the right tools to use.

In Question 10 *Do you use online dictionaries?* participants answered that Google Translate (85%) is their first favourite online dictionary and Word-Reference as their second translation service (50%).

In Question 11 *What kind of Internet connection have you got?* a sensible number of people said that they have got a fiber optical broadband (65%); 30% of the people said they have got a cable internet broadband; finally, 5% of the participants answered that he or she has got a mobile data traffic only.

Finally, Question 12 was an open question *Before the Covid-19 pandemic, were you familiar with technology and distance learning?.* The researcher has chosen this option in order to give the participants the choice to express their thoughts instead of only yes/no answers. Their feedback was crucial for this investigation since many participants admitted that they were not ready.

Some interesting answers were the following:

– "I was not trained for remote learning. I 've never heard about Microsoft Teams or Google Classroom before".
– "When schools closed in spring 2020 in Italy, I was 10. I was only a child. I needed an adult for switching a pc on".
– "Before the pandemic, I used to think about technology as something to pass my free time, not as device for doing my homework! Thanks to my teacher, I got the opportunity to know virtual classes and many website for online assessment and evaluation".
– "Before the pandemic I could stay in a comfortable environment, that is, my class, teachers and classmates supported me. We learnt together. When my school closed, I felt lonely, I was in front of a screen for hours and hours. I missed my friends. I don't like remote learning and I repel using technology by myself".

– "Distance learning was isolating and frustrating for me. I prefer traditional face-to-face lessons".

Conclusion for Hypothesis 2

Students aged between 11 and 13 are not sufficiently accustomed to use the Internet and other online resources for their learning. Also, even if they have several devices at home and a stable Internet broadband, they are not autonomous in using digital devices for their education. Moreover, their knowledge of software and websites for didactics is superficial and lacking. Finally, the participants stress the importance of a cooperative environment as crucial for their learning. From the outcomes of the investigation, teachers continue to be seen in a multidimensional way as tutor, aid and guidance for learners. A teacher has an essential role in student success, both in traditional and distance learning (Rice, 2006).

Conclusion

Summarizing the finding of this research, the outcomes have put the emphasis on three key themes:

1. Many students are not autonomous in finding online resources for their learning, so the guidance of the tutor/teacher is recommended.
2. A cooperative learning environment helps students to raise motivation and good results.
3. Transversal competences that can be taught in English classes are interpersonal and civic ones.

Far from being a solitary process, learning involves interacting with peers. According to some teachers, successful activities to engage students in remote learning are small-group discussions, online notice board projects like Padlet, and digital storytelling where each student can work with other people.

Transversal competences that can be taught in English classes are interpersonal like collaboration, problem solving and teamwork.

The abovementioned activities cope with these competences; needless to say, they train in different skills such as production skills. Adolescence has often been seen as a key period in identify formation. Consequently, young people need to acquire knowledge about several civic issues affecting modern society hoping that they can become active solvers for the next generations. In order to improve students good use of media and technology, the researcher recommends to all professional practitioners that digital didactics can feed the curiosity of learners only if it is presented in an enjoyable way.

Teachers' new mission is guiding teenagers in exploring media for their formal and informal learning rather than for pleasure only, proposing authentic and meaningful materials in order to grow up a wise and responsible generation of new millennials.

Future Research

This research would be beneficial for English teachers whose students are aged between 11 and 13 as well as for those who are willing to emphasize key and transversal competences in their lessons. It was conducted by the researcher involving a few sample of teachers and students. However, it kept in mind some of the general feelings reported by literature and Italian media about the relationship between teenagers, didactics and technology. Although the researcher invited students and teachers to provide neutral responses, it is probable that participants answered in ways that affirmed the research goals. To mitigate this limitation, a study involving a wider and bigger sample of participants is required. This research prompts for further consideration from the educational area about implementing digital literacy in learners since online learning requires advanced learning skills and motivational strategies (Niemi & Kousa, 2020).

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Appendix

Interviewee n°___	Tick one or more options and/or write	
1. Title and author		
2. Publisher		
3. Contents	Student's book Workbook Teacher's guide Tests SEN sections	Other…
4. Methodology[3] and approaches that are predominant in this book for you	Communicative approach Task-based learning Problem solving approach Cooperative approach	Other…
5. User friendly	Yes No	Other…
6. Graphical elements	Interesting and colourful Too serious Teenager friendly[4] Obsolete	Other…
7. Digital format	Yes	No
8. Emphasis on transversal competences	- learning to learn - digital competences - interpersonal and civic competences - entrepreneurship - cultural expression - other	
9. Useful for developing transversal competences? What are they?	Yes, because	No, because
10. Write the name of the textbook you prefer	1._____ 2._____ 3._____	

Table 1. Format for RQ 1.

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[3] Here 'methodology' or 'method' is meant as Harmer (2015) stated, that is, the practical realisation of an approach.

[4] Teenager friendly graphic design is meant as an attractive design for young learners, containing photos and topics familiar to these readers.

1) Are you a girl or a boy?	Girl	Boy	Not relevant
2) Have you got a computer or laptop?	Yes	No	Other…
3) Do you share this computer/ laptop with other people of the family?	Yes	No	Sometimes Always Often …
4) Have you got other devices like iPad, tablet etc.?	Yes	No	Other…
5) How many hours per day do you use your devices?	Less than two hours	Two hours	More than two hours …
6) Why do you use it/them?	For studying	For playing	Other …
7) Have you got e-Books?	Yes	No	…
8) Do you know that there are online resources for the subjects you study?	Yes	No	It depends …
9) Can you write one or more names of website you use for studying like online encyclopedia, online tests for self-evaluations etc.?	……… ……… ……… ……… ……… ………		
10) Do you use online dictionaries?	Yes	No	Sometimes Often
11) What kind of Internet broadband have you got?	Fibre optical Broadband	Cable broadband	Other…
12) Before the Covid-19 pandemic, were you familiar with technology and distance learning?	Write your answer ……… ……… ………		

Table 2. Questionnaire for RQ 2.

<center>4.</center>

History of Grandparents: A Reading Book That Circulates in Guinea-Bissau

Ró Gilberto Gomes Cá[*] and Tânia Maria F. Braga Garcia[**]

ABSTRACT

The research focused on textbooks that circulate in Guinea-Bissau, a country located in West Africa which was colonized by Portugal in the 15th century and went through continued struggles until 1973 when independence was declared unilaterally. The history of education in this country reflects the processes through which the educational system was configured based on the European school project produced in the 17th, 18th and 19th centuries, which gradually became hegemonic in other continents as well. The production and circulation of textbooks in the country have started to be studied by authors such as Pinto (2018). The objective of the research is to analyze a selected work – the book History of Grandparents by Maria do Carmo Mendes, Valentina Joaquim Ferreira and Maria do Carmo Machado, published by Escolar, in the Republic of Guinea-Bissau. Methodologically the research uses procedures of documental analysis, with categories related to cultural elements such as the presence or the description of traditional music and dance, among others. Complementary, testimonies from readers of the textbook were also recorded. The textbook is valued as a "memory space" (Escolano, 2006) and as a carrier of cultural transmission (Choppin, 2004).

KEYWORDS: *Textbooks; Guinea-Bissau; Reading books.*

Introduction

Guinea-Bissau is a country located in West Africa and was colonised by Portugal in the 15th century, during a process extended with struggles until 1973. Then, the independence was unilaterally declared and a transition government started, in the direction of democratisation. The relations between the history of the country and the education will be treated briefly, with support in the works of

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Cá (2005), Furtado (2005) and Mendy (1993), Guinean authors who have been developing studies to understand the processes by which the educational system was configured there.

The intention of the first section of this text is to situate the movement that switches from traditional African education towards a school education sustained by the school project that Europe produced in the 17th, 18th and 19th centuries, which gradually became hegemonic in other continents. The conditions imposed on the Portuguese colonies led to the extermination of local cultures and the abandonment of teaching methods of these cultures, imposing not only a school form, but also a whole project of civilisation (Veiga, 2002).

Among the elements that materially express the school model, textbooks stand out. Understood as artefacts of school culture (Julia, 2001), they express the school subjects, fundamental elements of the school model proposed in modernity (Vincent, Lahire & Thin, 2001) and, therefore, they can be associated with the civilisation project that guides school systems.

On the other hand, Viñao (2006) accepts the definition given to textbooks by Escolano (2006, p. 109) – *edited curriculum* – that reveals both their intrinsic relationship with school subjects and the ideological and cultural content conveyed, and considers them as instruments of dissemination of socially valued knowledge, but also of processes of oblivion, exclusion and abandonment of cultural content that is not 'interesting' to preserve. Based on these elements, in the following sections the paper will present an exploratory study on textbooks in Guinea-Bissau, highlighting the procedures and results of the content analysis of the reading book History of Grandparents, which has been circulating in the country for decades. The issue that guided the documentary research is related to the country's cultural diversity and its (lack of) representation in textbooks.

Theoretical Framework

The history of Guinea-Bissau taught in schools should not emphasize Eurocentric approaches, that is, it should not be told starting from the arrival of the Portuguese and slave traders in the 15th cen-

tury. It should be considered that "the destruction of the past, or the erasure of the 'historical consciousness' of the colonized, has always been part of the techniques of colonization, enslavement and inferiorization of peoples" (Mendy, 1993, p. 1). These techniques had clear objectives: total domination, control of power and territory, transformation of the African men into Portuguese men through processes of acculturation, violence and erasing ancestral knowledge.

Guinea-Bissau was part of the extensive *Mali* Empire, as the "nucleus of the vassal *Mandinka* kingdom of *Kaabu*, founded by the warriors of Emperor *Sundiata Keita* during the second half of the thirteenth century" (Mendy, 1993, p. 1). Between 1230 and 1500 many events affecting this society were recorded, including the arrival of the Portuguese in 1446 with the landing of Álvaro Fernandes and his men. Centuries later, at the Berlin Conference held between 1884 and 1885 for the partition of Africa – without the presence of any African leader – Guinea-Bissau was defined with a new geographical configuration.

It was the first Portuguese-speaking African country to declare its independence, unilaterally, on 24 September 1973, as an action of the African Party for the Independence of Guinea and Cape Verde (PAIGC). Between 1974 and 1991 the country lived under a single-party regime. The first multi-party elections were held in July and August 1994, and since then there have been alternations between periods of conflicts and periods of political and social stability.

Guinea-Bissau has a tropical climate, a population of less than two million inhabitants and a territorial extension of 36,125 km², bordered to the north by the Republic of Senegal and to the south by the Republic of Guinea Conakry. Authors differ on the number of ethnicities and languages in the country. According to Namone and Timbane (2017, p. 43), Guinea-Bissau has more than twenty ethnic groups among which are *Balanta*, *Fula*, *Manjaco*, *Mandinga*, *Pepel*, *Mancanha*, *Biafada*, *Bijajo*, *Felupe*, *Nalu*, *Tanda*, *Cocoli*, *Sussu*, each with its own language.

Regarding education, according to Cá (2005) most African peoples had/have their own ways of educating (children, young people and adults). In African societies, there were no specific people in charge of teaching in a formal system as it exists today, introduced by Western Europe; nor there were specific and privileged places for the transmission of knowledge (such as schools). The way of educating

was based on the conduct of each beginner. "Every adult was, in a way, a teacher. Education was not separated into fields and specialisations of human activities. Nobody was educated only for a certain period, one learned from life and knowledge over time" (Cá, 2005, p. 25).

The knowledge taught in a natural way in the daily life of the people allowed a better understanding of social realities. Even with the inexistence of a school institution with the standards that characterise the republican school of the European model, the teaching and learning process was a reality in traditional African societies and took place through the oral tradition, which lost space to the written social form (Vincent *et al.*, 2001) that marks the western school.

According to Hampaté Bâ (2010, p. 167) "among modern nations, where writing takes precedence over orality, where the book constitutes the main vehicle of cultural heritage, for a long time it was judged that peoples without writing were peoples without culture", an idea which has already been refuted by many African researchers/thinkers and those who study the continent.

According to Cá (2005), the country experienced the first signs of the institution of schooling two centuries after the invasion in 1446, when Dom João IV, King of Portugal, was commissioned to educate the population of Guinea. Furtado (2005, p. 130) states that in the beginning, schools functioned in a non-institutionalised manner, through contact with the native population, so as to gradually encourage the introduction of Portuguese customs, which would later serve as the basis of a consolidated education system. Precarious and limited to a certain group of people, education disrespected the organisational form of Guinean society at that time, with its values and customs. The administrative authorities were responsible for looking after the education system that was being set up, as they had closer contact with the local population. The methods were indifferent to local tradition and history, since they imposed the European way of thinking, producing violence in all its forms and with contempt for human dignity.

Furtado (2005, p. 131) states that the first colonial schools were only established after the Berlin Conference (1884/1885). Later, the Brussels Conference of 1890, aimed at suppressing the trafficking of enslaved Africans and giving protection to 'natives', also played an important role in this process of school institutionalisation. In relation to the economy, countries with more resources were able to offer better

education systems, from rudimentary to high schools and even technical and vocational schools, while in countries with less favourable conditions, the education system did not go beyond the rudimentary level and there were fewer schools for learning specific professions.

It can be observed that in this period there were different forms of education with different intentions for the indigenous people. Mendy (1993, p. 5) reiterates that in former Portuguese Guinea, as well as in Angola and Mozambique, but not in Cape Verde, there was a dual system of education, primary and secondary; the first was called "elementary and complementary primary education", was the responsibility of the colonial state, aimed at the "civilized" in urban centres and was based on the curriculum of metropolitan primary and secondary schools. The second, called "rudimentary primary", was intended for "uncivilized" people with the purpose of teaching them to "speak, read, and count in Portuguese", as well as spreading European customs and preparing future rural workers.

It is therefore understood that the educational institution served as a tool to ensure a minimum of education for the so-called 'civilised' and the natives. There was no intention to train people with the capacity for autonomous and critical thinking, as only the minimum education was offered, in order to achieve an initial integration of the natives and to subjugate them to the productive demands of dominant groups. With the exception of Cape Verde, in the former Portuguese colonies of Angola, Guinea and Mozambique, segregation and distinction with regard to rights and access to the educational system were well known and the objective was clear: to create a small group of literate elites who would serve the coloniser in maintaining his interests in the colony. Schooling was an essential element to strengthen the project of civilising Guinea-Bissau over the centuries, despite the local resistance to this process. The national liberation movement and the anti-colonial struggle led by Amílcar Cabral "gave a response to the schooling developed by the policy of the colonial administration" (Mendes, 2021, p. 33). The PAIGC defended a popular school, to democratise knowledge, but also a revolutionary school, including one focused on the development of African languages, with the creation of writing for those languages.

Nowadays, Basic education in Guinea-Bissau is divided into three cycles: first cycle (1st, 2nd, 3rd and 4th years), second cycle (5th and 6th years), and third cycle (7th, 8th and 9th years). In recent decades, changes have occurred in schooling in Guinea-Bissau and this was

one of the motivations for the development of the research on textbooks. These artefacts of material school culture are inseparable from the project of republican school, the mass school, which was started in Europe and spread to other continents, with its ways of organizing educational systems, but also transmitting a system of values, beliefs, standards of conduct and action.

The study of textbooks as "a space of memory" (Escolano, 2006), but also as an instrument of transmission of culture and formation of identities (Choppin, 2004), is a challenge and an open door to understand the effects of the project of civilization in countries colonized by Europeans. In Guinea-Bissau, textbooks used in schools are written in Portuguese and produced by the Escolar publishing house, with the backing of the Ministry of Education. There is also a support from non-governmental organisations (UNICEF, PLAN International, the World Partnership for Education and the Japanese Government).

These characteristics of the didactic production indicate the relevance of studies that investigate the content of the books that circulate in the country, especially regarding the cultural elements offered to Guinean students.

Methodology

From the thematic – the production and circulation and textbooks in Guinea-Bissau – we conducted a bibliographic review, identifying only a few research papers on textbooks in Guinea-Bissau produced between 2017 and 2021, at the University of Lisbon (Portugal) and at the *Universidade da Integração Internacional da Lusofonia Afro-Brasileira* (Brazil).

Thus, the problematic that would guide the research was defined and the following research questions were formulated: Currently, what are the textbooks in circulation in Guinea-Bissau? Where and by whom are they produced? Are there textbooks written in the national language, *Kriol*? Or, only in Portuguese? Are the country's cultures represented in the textbooks?

To seek answers to these questions, a research is underway with the aim of contributing to broaden the knowledge about textbooks in Guinea-Bissau. This text presents the exploratory study conducted

in 2021-2022, with the purpose of testing categories and methodological procedures to be used in the main study. The objective of the study was to analyse one specific textbook in order to: a) identify the cultural elements presented in written texts and images; b) to verify if the different ethnic cultures are represented and are presented to the children, the privileged readers of the work.

The analysed textbook is part of a collection that is now starting to be studied, in particular the volume for literacy (Pinto, 2018). We chose the book for the fourth year, entitled *História dos avós* (History of grandparents) written by Maria do Carmo Mendes, Valentina Joaquim Ferreira and Maria do Carmo Machado, and published by Escolar, in the Republic of Guinea-Bissau. Methodologically, the research uses procedures of documental analysis, using categories related to cultural elements. Complementarily, testimonies from readers were also recorded considering that the book has been in circulation since the 1990s is familiar to many Guineans.

Results and Data Discussion

The development of the analysis of the reading book *História dos Avós* was directed towards the following topics: the elements represented on the cover; the characters' representation, their names and clothes; songs and dances represented, implicitly or explicitly; words and expressions of different ethnic languages; stories narrated; and situations or social experiences presented to readers.

   a. *Observing the cover*. According to Dias (2021, p. 60), the cover represents the story *The Moringue Girl*. It is about a girl who was born and always lived inside a clay pot, a jug, and that comes out of it at the time of her wedding. The character is dressed in white for the ceremony and it is noted that she has no legs at that time. According to the researcher who studies gender issues, the story is well known in Guinea-Bissau, but it is not part of Guinean tradition.

   b. *Characters' names and clothes*. The characters, for the most part, wear clothes made of African fabrics with very colorful prints. Benê's family, for example, seems to be a Muslim family due to the characteristics of the clothes worn by her

mother and grandparents. Most characters' names are com-
mon, except for Benê, Nhara, Tida and Nhama. Names such
as Satam, Muscuta, Iama Conté, Samba, and Binta are typical
of Muslim ethnic groups in the country, such as the Fula and
the Mandingas. The characters Nhama and Nhara belong to
the Balanta group.

c. *Songs and dances represented, implicitly or explicitly.* We
found only one image representing a dance in a specific situ-
ation identified as *djumbai*. In the central part of the colorful
drawing two men playing the drums and some women danc-
ing while others clap their hands.

Music and dance constitute structuring elements of the social organiza-
tion of all Bissau-Guinean ethnic groups, such as the Balanta, Mandinga,
Papel or Budjugu. In the context of the Balanta, for example, the Kus-
undê dance plays a leading role in the rite of passage of the N'haie, just
as other dances such as the Djambadong do in rites of passage of other
contexts such as that of the Mandinga people (https://cabazgarandi4.
webnode.com/as-dancas/).

d. *Words and expressions from different ethnic languages.* In the
pages of the reading book no expressions were found relating
to the language of the different ethnic groups. Most of these
expressions belong to the language considered national in
Guinea-Bissau, *Kriol*, which does not belong to any specific
ethnic group in the country. Quirintin (p. 7), Tchoca (p. 11),
Djugudé (p. 20), Tchap, Cruanhã, Curtic (p. 28), Djumbai (p.
32) Tabanca, Cabra (p. 36), Nhara siquido (p. 39) and Régu-
lo (p. 43) are words from the *Kriol* language. The expression
N'dulé N'dulé (p. 9) is from the *Pepel* language, the only one
found in the book which is not from the *Kriol* language.

e. *Told stories.* On a visit to her grandparents' house, the char-
acter Benê listens to stories narrated by her grandmother
and grandfather. They have themes that indicate the inten-
tion to influence the children to develop socially desirable
qualities in their future life. They contain moral teachings
about how to act according to the standards of behavior ex-
pected in adult life. In these stories, cultural features from
Muslim ethnic groups (fulas, mandingas, mansoncas, djac-
anca, padjadinca and balanta mané) predominate. The sto-

ries include: *The cunning hare* (pp. 11-13), *The smart tchoca* (pp. 14-15), *The mongoose and the hare* (pp. 17-19), *Djugudé's revenge* (pp. 20-22), *The dog and the cat* (pp. 24-25), *The jiboia's eggs* (pp. 26-31), *Petabe's prize* (pp. 34-35), *Not everything that glitters is gold* (pp. 36-38), *Nhara Siquido* (pp. 39-41), *The Moringue Girl* (pp. 43-51).

f. *Represented social experiences.* The plot of the narrative was developed around two situations that represent different social experiences common to many Guineans:

– The situation of urban life, currently, related to the population's means of transportation: a stop at a bus station and several helpers (collectors) that shout the name of a specific destination to the passengers who will use their car (p. 5). In the narrative, the family is going to the rural area to visit the Grandparents.

– Some party setting, with features from different cultural traditions, as the situation in which people are positioned in a circle to dance with the sound of the drum (*djimbé,* p. 32).

Other experiences that are presented in that narrative: children organizing a group to play football and children coming back to the school after holidays.

Readers' Memories

Considering that the reading book *História dos Avós* has been circulating in Guinea-Bissau for at least three decades, one of the aims of the exploratory study was to approach adults who studied with this material in their schooling to raise elements of their relationship with this book.

What caught my attention the most was the reality shown in the book, especially for those who live in urban areas, bringing the feeling of going on vacation in the countryside. Another thing is the promise that parents sometimes make to us as a way of encouraging us to accomplish the school year. If you accomplish the year (are approved), you will have the opportunity to visit my tabanca (village). Another thing is the movement of helpers (collectors) and conductors. That image reminds me of when a person leaves an urban area to visit

the countryside and all those movements. (…) The book brings me memories of the time when I was still in the fourth grade (4th year), the colleagues, teachers, especially the memory of my grandmother (Nembali Mané – 28 years old).

In fact, that book portrays our specific matter (…). Many times, we are closer to our grandmothers. The book tries to bring this reality – we learn more from our grandparents. In my case, when I went to my tabanca, my grandmother would buy me my bucket, my basin to go pick up the cashew, I found everything organized. Benê the curious is like our reality, the aspect of our experience with our grandparents. I found her relationship with her grandmother very interesting. (…) she told stories about witchcraft, things that happened in the old days, when she was young. When I was scared, she would put me on her lap saying: – Don't be afraid, I'm here to protect you, no one will touch you (Aparício Marques Vieira – 28 years old).

When I used the book Benê the curious, *History of Grandparents* took me back to a very sad moment. I am a person who did not have the opportunity to meet my grandparents (…). The book was a sad and good thing – I had no grandparents, but I have an aunt who took this place. Today, looking at the book, I have good feelings because it is a book that was part of my childhood and taught me respect, djumbai (fun) along with people at the time of grandmother's story-telling. It was an interesting thing when people sat around her to listen to the stories (Teresa Insul – 28 years old).

The exploratory study showed that the categories chosen for analysis can bring positive results in the research, evidencing cultural elements that make up the books' texts and images. The analysis of this volume (for the fourth grade) showed that there are processes of homogenization in relation to cultural diversities, and only few were privileged in the textbook.

Despite these gaps, the book values rural life, which corresponds to the space where most of the country's population lives. It also includes experiences lived in urban spaces, such as the means of transportation to travel to rural areas. As the examined material does not contain activities, it was not possible to identify forms of school work. That will eventually be possible to be retrieved through interviews with teachers.

Final Words

The book *História dos Avós* circulates in Guinea-Bissau and marked people of a generation with their stories, characters, teachings that remained in the memories of the students who used this material. As mentioned, the book has been published since the 1990s with the same characteristics and conditions. Although the value of the work is recognized as a space for memory and for recording some identity elements, the analysis of educational changes that have taken place in the country suggests the need for new proposals and the updating of school books.

Regarding the production of textbooks, it is understood that there is a need to build alternatives that contribute to educational development since these resources are frequently used by teachers, but still restrictively available in the country.

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Selection, Production and Use of Teaching Resources by Literacy Teachers: Ethnographic Study in Settlement Schools

Roseli Borowicc* and Tânia Maria F. Braga Garcia**

ABSTRACT

This paper presents results of a research on the selection, production and use of teaching resources by literacy teachers in settlement schools in rural areas located in agrarian reform settlements, in the municipality of Abelardo Luz, SC – Southern Brazil. Their organization is influenced by different educational proposals that circulate in schools: the principles of the Landless Rural Workers Movement – MST, the Pedagogical Proposal for Rural Education which was produced nationally and the Educational Proposal of the Municipality, which was produced based on national guidelines and was elaborated with the participation of schools and teachers. The aim was to understand the production processes that take place in schools, the ways resources are selected, the sources of consultation and the pedagogical concepts that guide teachers' choices. We used the ethnographic approach working with two elementary schools. It was possible to conclude that teachers often use purchased games, posters, books of literature, videos, and a variety of printed materials taken from different sources and some of them extracted from the Internet. Teachers associate pedagogical principles derived from socio-interactionist and cultural-historical conceptions and these are the most frequent choices in the material resources.

KEYWORDS: *Settlement schools; MST education; Literacy teaching resources.*

Introduction

The theme of this research is the selection, production and use of teaching resources by literacy teachers and was based on empirical work in literacy classes in schools in agrarian reform settlements. These schools have their origins in the process of struggle for land, organized by the Movement of Landless Rural Workers (MST) in the 1980-1990s. The research focuses on the selection, use and produc-

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tion of teaching resources by teachers in these schools, located in the municipality of Abelardo Luz-Santa Catarina, Southern Brazil.

The focus of the research on literacy teaching resources derived from previous research (Borowicc, 2016) in which it was possible to verify the presence of textbooks and teaching materials in school life, while it was evidenced that literacy teachers, unlike other teachers, used little the textbooks in the literacy processes, in the specific case textbooks of the National Program of textbooks for rural areas (PNLD Campo 2016).

Another result that motivated the research was the finding that there were, at that time, several educational proposals circulating at the same time in the schools and influencing teachers' decisions about the choice of textbooks and, therefore, in lesson planning. In the schools there were the Curricular Proposal of the municipal education network, elements of the trainings of the National Pact for Literacy at the Right Age (PNAIC), a continued training programme for literacy teachers, coordinated by the Ministry of Education, as well as elements arising from the principles of MST Education, Education for Rural Areas and the curricular guidelines of the Municipality.

The main research questions sought to understand the use of literacy textbooks produced and distributed free of charge to Brazilian public schools by the National Programme for Books and Teaching Materials – PNLD and to learn about other teaching resources used by teachers in literacy classes. The following guiding questions were formulated: If the teachers do not use textbook in the school, what resources do they use to teach literacy? Where are they found, and from what sources? Are their choices linked to any particular pedagogical conception? What pedagogical conceptions guide them? How do the various educational proposals found at school relate to the processes of production, selection and use of resources for literacy teaching?

The main objective of the research was then defined: to analyse the processes of selection, production and use of teaching resources used in literacy classes in a specific reality, the schools of agrarian reform settlements. There was also the need to investigate the relationship between the educational proposals circulating in the schools, among them the principles of the Education Project of the Landless Rural Workers' Movement (MST) and the Pedagogical Proposal for

Rural Education, which underpin the processes of origin and construction of the schools.

In this sense, the specific objectives were: a) to identify and categorise the teaching resources used to teach literacy, especially those produced by the teachers themselves for their classes; b) to locate sources of consultation and reference used by the teachers to select and prepare teaching resources; c) to explain the pedagogical conceptions that underpin the choice of resources for the classes.

Section 1 – Theoretical Framework

This paper presents a summary of the contributions on the meaning of schools in agrarian reform settlements, which originate and develop from the need to provide education for children who, together with their parents, take part in the struggle for land. In the case of Abelardo Luz (SC), the place where this research is carried out, this struggle was organised by the Landless Rural Workers' Movement (MST) in the 1980s and 1990s. For Stédile (2013, p. 13), this movement for the land struggle began to act in Brazil in the 1980s, in the midst of the crisis generated by the implementation of the "green revolution", a model of agriculture imposed by the United States on Brazil in the 1970s and 1980s, which was characterised by technological modernisation that guaranteed an increase in production, without altering the distribution of land ownership.

This model of agriculture left thousands of rural workers unemployed by the mechanization of farming and, at the end of fifty years, hunger, poverty and migration increased, leaving many families landless and without basic living conditions, while the companies responsible for implementing it came to control the entire market of agricultural inputs and commodities (Stédile, 2013, p. 13).

Another factor in the genesis of the MST was the work of the Pastoral Land Commission, which contributed to the formation of a single national movement, which came into being as an autonomous movement in the 1st National Meeting of the Movement of Landless Rural Workers, in Cascavel, Paraná, in January 1984. This event defined the principles, the form of organization, the demands, the structure and form of struggle of the movement. A third factor

that strengthened the emergence of the MST was the struggle for the democratization of the country and against the Military Dictatorship, which associated the struggle for agrarian reform with the workers' strikes of 1978 and 1979.

The struggles and victories of this period affected several territories in the Brazilian countryside. Here, education had to provide answers to the rural workers' desire for liberation. Despite being a symbol of the model of society being fought against, schooling is claimed as part of the struggle. Therefore, rural education recognises the need to educate and teach universal knowledge, but proposes to revise the objectives of school education to establish other models of social relations, with greater equality and justice, whose reference is community and group culture.

In this context it is necessary to understand the social meaning of schooling. The research is based on Schmidt and Garcia (2008) to discuss schooling having as reference the relations between individuals and society, beyond the reproductivist and relativist theories. Schooling is understood in the process of tension between social structure and the individual action, which allows bringing to the centre of attention the school as a space of social production.

In this way we can find meaning in the claim for public policies through the Rural Education Movement, not denying the school, but seeking to overcome historical deficits of access to knowledge for the people who live in the Brazilian countryside. This proposal is in dialogue with the MST's Education Project, which guided the formation of the schools participating in research, a place where other educational proposals intersect in the choice of textbooks and other teaching resources for literacy.

Section 2 – Methodology

The research approaches the schools considering the local and social context in which they are located, their daily lives, understanding them from the perspective of a social construction, a concept supported by Rockwell and Ezpeleta (2007), partly determined by the structures, but also produced by the action of the subjects (Schmidt

& Garcia, 2008). It understands the importance of observing the daily life of the school, from the concept in Heller (1992), to analyse the social and cultural dynamics that occur there. To achieve the objectives, we opted for an ethnographic approach, with fieldwork developed in two basic education schools that offer primary schools and early childhood education, located in agrarian reform settlements in the municipality of Abelardo Luz (SC, Brazil).

The participation in the daily life of the schools allowed them to give response to the proposed objectives, in particular to identify and categorize the teaching resources used to teach literacy, especially those produced by the teachers themselves for their classes. The procedures included participant observation in the school and in literacy classes, with records in a diary, limited to the conditions imposed by Covid-2019 pandemic in the years 2020 and 2021; questionnaires, interviews and informal conversations with collaborators such as literacy teachers, pedagogical coordinator, people from the community; structured instruments for information collection; documentary analysis of plans, programs, curriculum guidelines, books and other teaching materials.

In the first phase of the fieldwork, eight teachers collaborated with information about the development of the literacy activities, identifying resources used in the classes. The collaborators also indicated their sources of consultation and research for the production of their own resources. In the second phase, the empirical work focused on two classes to carry out observations, interviews/conversations and analysis of materials in use in the classes, and finally focused attention on one of the classes, accompanying the didactic work, analysing the use of books and other resources.

The set of data was analysed from categories production defined during the fieldwork, as the results of the procedures highlighted the use of different teaching resources, which were classified according to type and function, as presented below.

Section 3 – Results and Data Discussion

To historicize particularities of the school experience in the locality, conversations were held with people from the community and

the school, collecting testimonials from collaborators who participated in the construction process, recording memories that were not documented. They made it possible to roughly reconstruct the origin of the school, the activities carried out, the materials used and the difficulties in obtaining them. When one looks at undocumented history, one realises that the documented version "becomes partial and produces an effect of concealment of the real movement" (Rockwell & Ezpeleta, 2007, p. 13).

Observation of schools and teachers' planning, questionnaires and interviews/conversations, allowed mapping the teaching resources used by teachers for literacy. Research instruments were used to record the variety of resources, which were differentiated as material resources and immaterial resources. The first ones include PNLD textbooks, children's literature books, materials for copying, materials used on the walls of the room, activities extracted or reconstructed from the Internet, games, toys and traditional games, audiovisual materials; elements such as medicinal herbs, old family objects, photographs, which establish a relationship with the life of the community, were also mentioned. Among the intangible resources, were found the round songs and games of local culture, oral stories of life, stories of the processes of struggle and conquest of land, narratives of residents about the construction of settlements, among others.

The didactic resources were listed according to the following classifications: printed, digital, audiovisual, games bought, games produced at school, toys bought, toys produced at school, objects, materials for the teacher's use, materials for the students' use, songs, stories, reports, memories of residents. There are resources used by all or most of the collaborators (such as books, games, materials for teaching mathematics, dominoes, content videos, among others), and there are resources used by few collaborators (such as dolls, puzzles, stories of residents and families, among others). This set allows us to understand some elements of the process of knowledge construction in literacy classes.

To methodologically meet the option for the ethnographic approach (Rockwell, 2009; Garcia, 2001), one of the research strategies was classroom observation, monitoring of planning activities and other school routines, between the months of September to December 2019, in a 1st year class of primary schools, one period per week. Field

records were made, describing the dynamics observed in the school activities, identifying and describing the types of teaching resources used by the teacher in the classes. At the end of the observations, the records were finalized and the analyses were completed. The resources were categorized into material resources and immaterial resources, also situating the type of activity proposed for each of them.

List of Teaching Resources Used in the Classes		
Resources		**Activities**
Material resources	Pupil's notebook	Copying and written production (syllables, words, small sentences, small collective texts, drawings)
	Blackboard	Writing by the teacher and sometimes by the students
	Children's literature books	Reading aloud and silently by students to teacher and classmates
	Textual genres (nursery rhymes, notes, poems)	Reading, reciting, text production
	Old textbooks for cutting out words	Cutting and pasting activities
	Internet activities (Literacy/Portuguese, science, maths)	Syllabic literacy, texts, painting of activity drawings, mathematical operations and problems, word list, measuring time
	Textbooks – maths, Portuguese, science, geography.	Reading, interpretation and implementation of activities
	Literacy mobile	Word formation
	Alphabeton wall	Reading
	Poster with syllables on the wall	Reading
	Reading book (worksheets with alphabet letters, texts, syllables and words taken from the Internet)	Reading
	Blank paper	Drawing
	Games – Syllable dominoes	Word formation

Immaterial resources	Everyday knowledge	Questioning, dialogue about what children know about the subject studied, linking content from textbooks to reality
	Oral application and explanation of content (teacher), without any material resources.	Numbers, mathematical operations, counting, monetary system, dictation of words and sentences
	Knowledge about agriculture, gardening, food	Dialogue (students then produce a drawing)
	Orality	Presentation of work (drawing) by pupils to their classmates
	Nursery rhymes	Sung activities

Table 1. Didactic resources used in the 1st Year 1 of Primary School.
Source: The authors.

The observations contributed to give meaning to the resources used and to establish relationships between resources listed and practices in literacy classes. Some of them are indicated in Table 1.

Conclusions

The results contributed to answer the questions formulated and support the conclusion of the research. Firstly, it was possible to discuss the relationship between local reality, culture, local histories and the selection of teaching resources for literacy, in the case under study. In the case of rural schools, the conclusion was that, from the point of view of the teaching resources in the material category, there was little direct relationship with community life, with the reality of those who live and work in the countryside, a relationship that is a basic principle of MST education and of rural education.

However, didactic resources of an intangible nature were present in the lessons with the aim of remembering the struggle and victories of the social movement, the construction of the settlements and the schools in this particular reality. The relationship with the local life of the settlement community is in the school's planning and also

takes place in some classes – as can be seen in a Geography class. The children are frequently stimulated to talk about events, activities and issues of local life, which was classified as resources of an intangible nature.

But it was not in daily school life that the greatest presence of these resources was verified. The elements that constitute the culture of the locality – in particular the struggles for land, housing and school, the conditions of current life derived from the processes lived through – are manifested with greater force in commemorations related to the occupation of land and other events of local history, or in the meetings of the Little Landless children that take place at the school and in the community. As these are schools located in the countryside, which were conquered during the processes of struggle for land, this result suggests the need for re-discussions among the educators about the relationship of teaching with the life and culture of the pupils, especially in literacy.

Secondly, the didactic resources that make up the material culture bear little relation to the MST's educational proposal. However, other elements analysed, such as the planning of lessons using textual genres, provided evidence that the MST's education and literacy proposal is followed by the teachers of the schools in some of the recommendations: the use of texts that circulate in social life, the presence of discursive genres and the production of texts by the pupils. This relationship may be explained by the set of continuing teacher education activities organised by various agents during the schools' existence.

Based on the research process and the results obtained in this case study, we conclude that the relations between school knowledge and local culture, as well as the preservation of the history of the settlement and the struggles for land, find more space and conditions of expression in the production of immaterial resources by the teachers, in situations of orality in the classroom, in which there is more autonomy of work and reduction of the control mechanisms by the education system, which acts upon the schools in the sense of neutralizing or accepting the influence of the social movement, depending on the political orientation of the local government in each historical moment.

Therefore, the MST's conceptions and practices, reconfigured in Countryside Education, remain present in the settlements as a political and cultural force that guides the actions of individuals, includ-

ing teachers, but have not been transferred in equal intensity to all the resources used in the teaching of reading and writing, since, in this scope, the pragmatic dimension of school cultures – with the influence of the political culture - defines with more autonomy and property the emphases, the priorities, the purposes, the limits and the options of the pedagogical work and, consequently, of the school experience produced there.

The research leaves open relevant issues that need to be deepened, among them those related to the formative processes and the organization of school work in settlement schools, especially regarding the loss and absence of formative spaces in recent years, which would need to be strengthened, consolidated and expanded. The weakening of the proposals of Field Education in this historical moment alerts to the need and urgency to retake discussions and proposals that proved to be valuable and that produced practical effects in the achievement of fundamental rights, including the education of rural people, respecting their identity, their history and their demands.

Finally, we highlight the relevance of resuming studies about the paths that make it possible to explain the relations between the methodological dimensions and other dimensions – such as the philosophical and sociological – of the educational proposals and continuing education for teachers who work in settlement schools, as a way to resume principles and sustain education in local life. In this sense, the proposals for the collective production of teaching resources would be a strategy to help overcome the distance between the content of teaching materials and local culture, bringing the daily life of the students into the schools.

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DISCIPLINARY DIDACTICS – NATURAL SCIENCES

6.
Mapping of Papers on Biology, Science, Physics, and Chemistry Textbooks

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ABSTRACT

This paper seeks to map and categorize the production of articles on textbooks published in fourteen journals available for online access, classified in extracts A1 and A2 of CAPES, to analyze which approaches are being more and which are being less addressed over time. The search for papers occurred in all copies made available by the journals without a pre-established initial deadline. The final time frame was the year 2020. The keywords that helped in this first selection of articles were "book(s)" and "textbook(s)." The journal volumes were accessed one by one, and if there was any indication in the title or the paper's keywords that it was about textbooks, it was selected for a second analysis. Two hundred thirty papers were selected, later organized into eight categories: 1) Language used in textbooks, 2) Themes and Contents in textbooks, 3) Discussion of methodologies and approaches present in textbooks, 4) Didactic Transposition, 5) View of Science and world view, 6) Theoretical research on textbooks, 7) Use, choice, and conceptions of textbooks, and 8) Education of teachers. Not identifying with any of the categories was considered as "others". The results showed that more than 55% of the articles were published in only five of the fourteen journals; that there was a significant increase in publications in 2008, probably driven by the distribution of books by the National Textbook Program for the disciplines of Natural Sciences; that the surveys of categories 1 and 2, which deal with themes, contents, and languages used in textbooks, are the majority, around 65%, while categories 7 and 8, which discuss how teachers and students appropriate textbooks, do not reach 10%. As a possibility of continuing the research, it is proposed to search for articles in annals of events in the area of Science Education and journals classified in other extracts of CAPES.

KEYWORDS: *Science teaching; Science textbook; PNLD.*

Introduction

Knowing the scientific production and approaches to a given research topic over time contributes to the appropriation of the the-

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oretical frameworks used by researchers, besides understanding the trends and problems related to the topic. Researching textbooks is justified by the role it plays in the education of Brazilian children and young people, but also beyond that.

The presence of textbooks in Brazilian education is of great recognition, and their use in teaching takes on several aspects, as an auxiliary device for the teacher in the organization of classes, as references for content indication and exercises by students, as well for purposeful and methodological use inside classrooms. It is possible to recognize, therefore, the importance of research in textbooks, which, in addition to being present in the school culture, experience high investments of public funds to reach the schools.

Furthermore, knowing the research trends allows the academic community to assess whether the production of articles is redundant or if there is a need to carry out more research focused on an aspect that is little explored, forgotten, or neglected by the current paper production.

Therefore, associated with a research program in science teaching, this paper sought to investigate and understand how investigations about textbooks related to science teaching have been carried out.

Contextualization

In Brazil, public policies for the purchase and distribution of textbooks dating back to 1938, when, by decree, the National Textbook Commission (CNLD) was established with the task of defining, throughout the national territory, the directions of production, import, control, and circulation of textbooks in Brazil (Brasil, 1938). Since then, according to Höfling (2000), the management of the purchase and distribution of textbooks has passed through several foundations and institutions until the creation, in 1985, of the current National Textbook Program (PNLD), managed by the National Fund for Educational Development (FNDE).

"PNLD actions are aimed at students and teachers of public basic education schools, as well as non-profit community, con-

fessional or philanthropic institutions and agreements with the Government" (FNDE, 2020). The amounts invested in this program are billions. Only in 2019, according to statistical data available on the FNDE website, the federal government invested BRL 1,102,025,652.17.

Although there are significant efforts to ensure that textbooks reach schools, some challenges need to be overcome, such as improving the process of distribution and choice of textbooks, since copies of textbooks are often different from the chosen ones or an insufficient number of copies are delivered to the school.

To understand how the Brazilian scientific community has approached this topic over the years, a survey was carried out in Science Teaching journals to assess trends in producing papers on Physics, Chemistry, Biology, and Science textbooks. Recognizing these trends allows the scientific community to establish patterns of what has been published and perceive topics that have been forgotten.

Methods

A survey was carried out in fourteen Brazilian journals in Science Teaching. For the selection of these journals, was used the classification of scientific production, Qualis from Coordination of Superior Level Staff Improvement (CAPES), which classifies, among other things, national journals in strata. This research selected journals classified in strata A1 and A2, corresponding to scores of 100 and 85 for the teaching area.

The search for articles in each journal was carried out by accessing the volume one by one, looking for the word "textbook" in the titles or keywords. When found, the article was selected for further analysis, which consisted of reading its abstract to certify that it was about textbooks.

The initial time frame is specific to each journal, counting from when each journal started making online papers available for access. The final time frame was the year 2020. The table below organizes the journals analyzed with ISSN data.

n.	Revistas	ISSN
1	Acta Scientiae: Revista de Ensino de Ciências e Matemática	2178-7727
2	Alexandria: Revista de Educação em Ciência e Tecnologia	1982-5153
3	Amazônia: Revista de Educação em Ciências e Matemáticas	2317-5125
4	Aretê - Revista Amazônica de Ensino De Ciências	1984-7505
5	Caderno Brasileiro de Ensino de Física	2175-7941
6	Ciência & Educação	1980-850X
7	Ensaio: Pesquisa em Educação em Ciências	1983-2117
8	Investigações em Ensino de Ciências	1518-8795
9	RBECT – Revista Brasileira de Ensino de Ciência e Tecnologia	1982-873X
10	Rencima: Revista de Ensino de Ciências e Matemática	2179-426X
11	Revista Brasileira de Ensino de Física	1806- 1117
12	Revista Brasileira de Pesquisa em Educação e Ciências	1806-5104
13	Revista de Educação, Ciências e Matemática	2238-2380
14	Revista Dynamis - Pós-Graduação em Ensino De Ciências Naturais e Matemática	1982-4866

Table 1. Magazines that participated in this research.
Source: The authors (2022).

Statistical data from each journal was accessed to establish comparisons of general publications and publications in textbooks. For those that did not provide this data, an estimate was made of the total amount of publications based on the amount published in the first volume of each year of these journals. The total number of publications in all journals was 8,824 papers, while the number of publications about textbooks was 207.

Results and Data Discussion

A comparison between publications about textbooks per year and the estimated total number of publications in the researched journals

can be seen in the figure below. Regarding general production, on average, the percentage of publications about textbooks is 2.4%. It is observed, however, that in specific years there is a significant increase in this percentage, as in the years 2008, 2018, and 2019, which present the rates of 4.0%, 4.2%, and 3.9%, respectively.
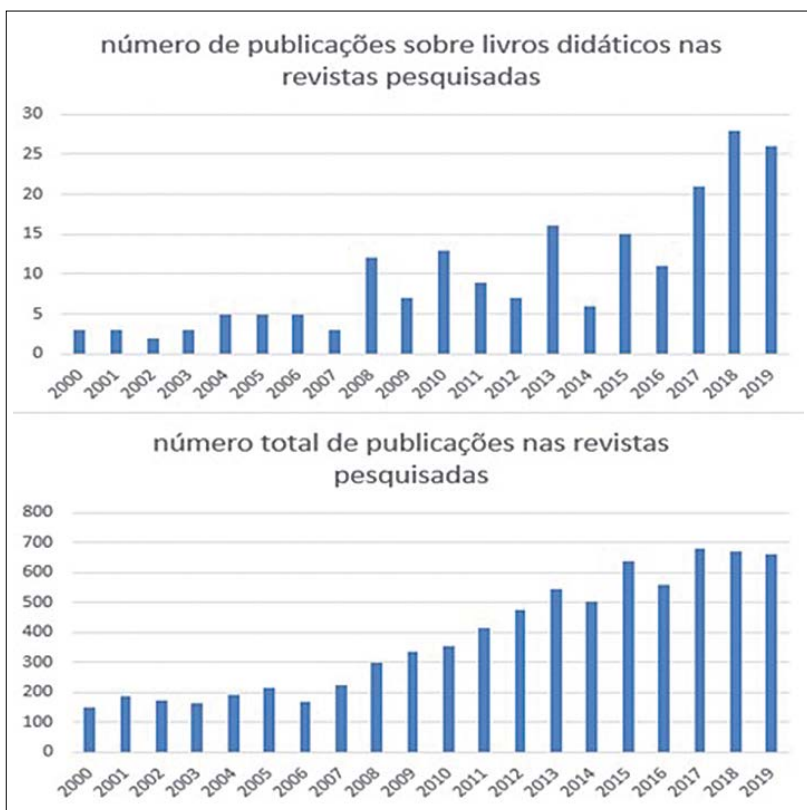
Figure 1. The first figure shows the number of publications about textbooks per year, and the second figure shows the total amount of general publications in journals per year.
Source: The authors (2022).

Regarding the increase in the percentage in 2008, it can be speculated that the justification is because in 2008, the PNLD distributed textbooks for the fields of Biology for the first time, and in 2009,

for the areas of Physics and Chemistry, which may have provoked a greater willingness to research this teaching and learning object. The increases in the percentages in 2018 and 2019 may be associated with the greater recognition of the importance of research on specific topics in the textbook. This analysis deserves to be better detailed in discussing the categories, which will be presented below.

It was also possible to compare the number of published papers concerning general themes and papers about textbooks. This comparison can be seen in the figure below.
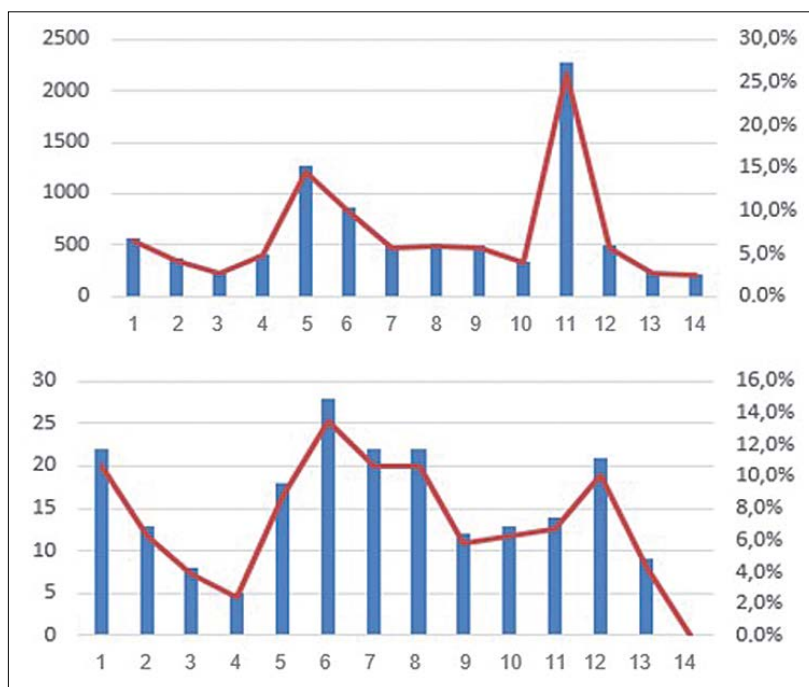
Figure 2. The first figure shows the number of publications concerning general themes per journal, and the second figure shows the number of publications about textbooks per journal. The horizontal axis represents the number of each journal according to Table 1. The red line represents the visual trend.
Source: The authors (2022).

According to **Figure 2**, it was found that 55.6% of the articles published about textbooks are concentrated in five of the 14 journals:

Ciência e Educação; *Acta Scientiae*; *Investigações em Ensino de Ciências*; *Ensaio: Pesquisa em Educação em Ciências*; *Revista Brasileira de Pesquisa em Educação e Ciência*.

However, it is possible to notice that the journal that published the most online papers (25.9% of the total), *Revista Brasileira de Ensino de Física*, is only the seventh in textbook publications (6.8% of the total). Concerning the second most published journal (14.5%), *Caderno Brasileiro de Ensino de Física*, it was noted that this is only ranked sixth (8.7%) in published textbook papers. The magazine with the most significant publications on textbooks is *Ciência e Educação*, with 28 articles (13.5%). This magazine is the third most published online journal on other topics in the researched period, representing 9.8% of the total production.

Another possible result from this paper represents a relative balance between publications on Physics, Chemistry, Biology, and Science textbooks, with 24.2%, 17.9%, 24.2%, and 27.5%. Publications about textbooks for other subjects account for 12.6% of the total. It can be seen that the sum of the percentages totals 106.3%. This is because some papers present analyses of textbooks from two or more fields. **Figure 3** shows the distribution considering the number of articles published per discipline.
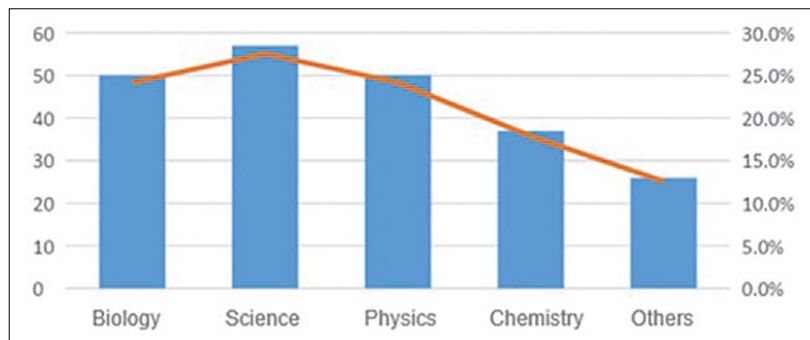
Figure 3. Number of publications per discipline on textbooks.
Source: The authors (2022).

The categories and the respective criteria for belonging are presented below, as well as the number of papers included in each. The

discussions established in the analyzed papers are not restricted to just one textbook aspect but also through several other issues linked to the main focus. However, for the most part, it was possible to define the predominant direction. Thus, despite presenting interconnected themes, each article was admitted to only one category whose main focus stood out.

n.	Categories	Belonging criteria
I	The language used in textbooks	Discuss alternative texts, analogies, metaphors, and diversification in the language present in textbooks. Articles that seek to analyze and classify imagery-verbal representations, their association with content, and their contributions to the teaching-learning process fall into this category.
II	Themes and Contents in textbooks	Documentary research investigated the depth, incompleteness, distortions, representations, and absence of themes and contents in textbooks. Analyze conceptual errors and the proposition of new ranges, and discuss contents that lose meaning when presented out of context.
III	Discussion of methodologies and approaches present in textbooks	Research related to different ways of approaching the contents, such as the Science, Technology, Society, and Environment approach, historical approach, and technological approach.
IV	Didactic Transposition	Analyses how the transposition of a scientifically produced concept in the sphere of wise knowledge occurs to the globe of knowing how to teach (Chevallard, 1991), specifically for textbooks.
V	Science View and world view	Epistemological evidence allows evaluating the vision of Science and the world underlying its contents, methodologies, and activities.
VI	Theoretical research	Literature reviews; analysis of official documents, such as the PNLD notices; research with a philosophical and pedagogical focus; and discussions about the textbook as a vector that drives what will be worked on during the school year in a given subject.

VII	Use, choice, and conceptions	How teachers and students use textbooks in the teaching-learning process, the concepts of textbooks and the criteria teachers establish for their choice.
VIII	Teacher training	Analyze the initial and continuing training of teachers to use the textbook in their pedagogical practice.
IX	Others	Papers that do not fit into any of the previous categories.

Table 2. Categories and their belonging criteria.
Source: The authors (2022).

The following figure presents the number of publications belonging to each category.
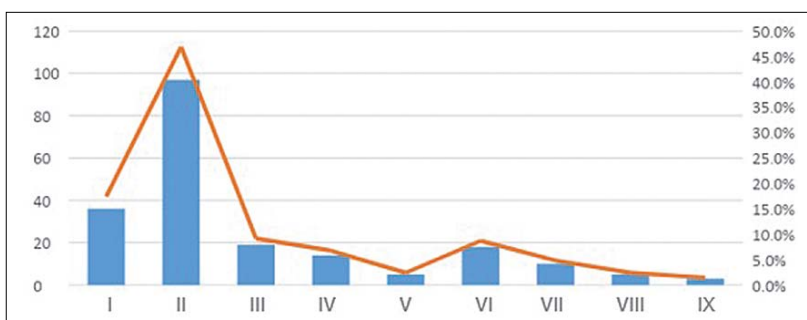
Figure 4. Number of publications for the categories. The horizontal axis represents the categories per number, as in Table 2. The red line represents the visual trend.
Source: The authors (2022).

Figure 4 shows a significant difference between the number of publications in category II (Themes and Contents in textbooks) and the other categories. Almost half of the publications in the surveyed journals, 46.9% of the total, are on issues related to the textbook's contents. In the second place, with 17.4% of the total, are the surveys analyzing the language used in textbooks. These two categories alone correspond to 64.3% of the total publications.

Research analyzing teachers' initial and continuing education for textbooks (category VIII) represents only 2.4%, and those discussing how school subjects are appropriate to the textbook (category VII) represent 4.8%. The importance of these two categories is highlighted because the papers that compose them can help to explain the non-use or underutilization of the textbook, as pointed out by Zambon and Terrazzan (2017), when they conclude that, although the book is present in most of the schools, the exercise-based way of teaching physics is still predominant. Thus, another result of this research indicates the need to increase the number of investigations on how school subjects appropriate the textbook, and the training teachers receive to use it in the teaching-learning process.

Conclusions

This research aimed to map and categorize the production of papers on textbooks published in Science Teaching journals, classified in strata A1 and A2 of CAPES.

In terms of the increase in the number of articles on textbooks made available online, it is noticeable that in 2008 there was a significant growth, possibly driven by the beginning of the distribution of textbooks by the PNLD for the disciplines of biology, physics, and chemistry.

The results showed that the most published papers, about 55.6% of the total concerning textbooks, are concentrated in five of the 14 journals. However, these journals do not include those that most publish articles on other topics.

It was also found that there is a balance in the number of publications on textbooks between the disciplines of Science, Biology, Physics, and Chemistry, with a slightly higher percentage for papers production related to the Science book and a somewhat lower rate for the production about the Chemistry book.

Regarding the focus on the production of textbooks, it can be seen that most of the published papers, about 46.9%, are concentrated in the category "Themes and Contents in textbooks", accountable for discussing the depth, incompleteness, distortions, representations, and absence of themes and contents, conceptual errors and proposals for new ranges.

Concerning the other eight categories, there is low production of articles that discuss aspects related to the initial and continuing education of teachers for the choice and use of textbooks, as well as those that investigate the effective use and appropriation of textbooks by subjects schoolchildren.

Finally, as a possibility to continue the research, it is proposed to search for articles on textbooks in magazines classified in other strata of CAPES and the publications carried out in the annals of the main events in the area of Science Teaching. It is also possible to subcategorize the articles belonging to each category and deepen the analysis to verify potential changes in production trends over time.

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7.
Natural Sciences Textbooks Authorship: An Analysis of the Academic and Professional Profiles in the Materials from the PNLD 2019

Lucimara Fabricio[*] and Alisson Antonio Martins[**]

ABSTRACT

Based on Tardif (2003), we consider that the production of school knowledge to be taught and learned, from a scientific literacy perspective, results from the relationship between professional teaching knowledge and textbooks. The objective was to analyze the profile of the authors of didactic materials of Natural Sciences from the Brazilian Textbooks and Didactic Materials Program (PNLD 2019) chosen by the teachers of the 3rd year of Elementary School of the Municipal Education Network of Curitiba, Paraná. The Lattes Curriculum and the biographies of the authors were consulted to analyze their academic background and professional experiences in teaching. For the treatment of information, we used thematic categorization (Gibbs, 2009). Of the authors analyzed (n. 20), about 30% have training in the area, 10% have stricto sensu production on schoolbook studies, and 15% have experience working in the early years of Elementary School. The results show a gap between academic background and professional experience. We conclude that the plurality of teaching knowledge is the foundation for the acquisition and production of knowledge for the construction of their work tools. This problem can be overcome within the scope of school culture, based on how teachers deal with the textbooks.

KEYWORDS: *Textbooks; PNLD; Natural Sciences education.*

Introduction

Researchers have been discussing the need for renewal in science teaching at all levels and modalities due to results of Brazilian assessments, such as the Programme for International Student Assessment

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(PISA – *Programa Internacional de Avaliação de Estudantes*, in Portuguese), the Index of Development of Basic Education (IDEB – *Índice de Desenvolvimento da Educação Básica*, in Portuguese), the Basic Education Assessment System (SAEB – *Sistema de Avaliação da Educação Básica*, in Portuguese), among others, which indicate the difficulty of Brazilian students to achieve the expected grades. These results were presented in a study carried out in Brazil in 2014 on the Scientific Literacy Indicator (CLI – *Indicador de Letramento Científico*, in Portuguese), organized by the Paulo Montenegro Institute, Ação Educativa, and the Abramundo Institute (IBLC, 2014), whose objective was to assess the extent to which the Brazilian young and adult population demonstrates mastery of skills and knowledge of science uses to, through reading, writing, and mathematical reasoning, understand and solve problems inspired by everyday situations that are related to a greater or lesser extent to the world of science.

The research showed that Brazilians are below the expected results and these data reveal how the Brazilian history of political, cultural, social, and economic marginalization has had serious consequences on the quality of education offered. Thus, further studies on the contributions and challenges of textbooks for the promotion of scientific literacy are necessary.

The study of textbooks has expanded in recent years. According to Munakata (2012), from the 1990s onwards, there has been more research in the area of education dedicated to a variety of themes, such as the production and evaluation of the contents present in these materials, the choice and use of textbooks in educational practices, public policies, the presence and influence of ideologies, as well as studies on the repercussion or impact of the educational policy of textbooks within the scope of the Brazilian Textbooks and Didactic Materials Program (PNLD), among others.

Most teachers who work in science teaching in the early years of Elementary School and do not have specific training in the area have only initial generalist training. Given this context, their classes are often planned based on their main available resource, that is, the textbook.

The theses defended here are that the production of school knowledge to be taught and learned by students, from a scientific literacy perspective, results from the relationship between the teacher's professional knowledge and textbooks. In this work, we focused

on the phenomenon of authorship, and the general objective was to analyze the profile of the authors of the didactic books of the specific collections of Natural Sciences from the National Textbook Program 2019 (PNLD 2019), chosen by the teachers who work in the 3rd year of Elementary School of the Municipal Education Network of Curitiba.

Science Textbooks and Authorship: Theoretical Aspects

Of the materials used by teachers, textbooks are those that accumulate a repertoire of knowledge, skills, and methodologies following the current socio-historical context. Given this importance, Munakata (2012) points out that textbooks and other didactic materials have aroused interest among researchers, thus giving prominence to a field of investigation that has expanded and strengthened, with emphasis on their educational role in the schools, especially after the military dictatorship period, when its presence increased.

Discussions about these materials involve several subjects: teachers and students, as consumers of such production; editors, with economic interests; political authorities, as managers of public policies, as well as having an interest in the control of ideology and researchers in the area.

According to Garcia (2009), the existence of these materials in schools, as a result of national policies, represents the high investment of public money and defines work possibilities that do not always contemplate the didactic and methodological positions of teachers, nor their personal choices. In other words, textbooks are produced under national guidelines and are used in different schools and locations by teachers with different training and attitudes and by students with different cultural and social experiences.

The importance of these materials in the school context points to the theoretical elements that define their perspectives of analysis, as shown by Garcia (2009). The first perspective is to conceive them as an *object of the school culture*, which expresses contents resulting from cultural selection processes. The second perspective refers to the *political economy*, i.e. the production and distribution of books and teaching materials. The third perspective refers to the *school's culture*,

that is, from this perspective, it is possible to perceive how the existence of textbooks and didactic materials impact school life in different ways, i.e. in the conduction of classes, in the use of different languages, in the imagination, its form of regulation and production, in the choices, in the teaching planning, among others.

Methodology

The PNLD 2019 distributed textbooks to students for the period of four years, thus ending in 2022. Here, the data analyzed referred to the educational background of the authors of Natural Science textbooks, from specific collections of Sciences for the 3rd year of Elementary School, chosen by the teachers of the Municipal Education Network of Curitiba, Paraná. For this analysis, the educational background of the textbooks' chief editor was considered, that is, the name(s) mentioned on the cover of each book.

To access the information about the textbooks' authors, the PNLD 2019 Textbook Guide was taken as a reference, where all the collections evaluated and approved by the Ministry of Education (MEC) are listed. This guide and the list of textbooks chosen by each school unit of the Municipal Education Network of Curitiba are available on the Federal Government website (Brasil, 2019). In total, 20 authors were identified, who worked in 7 different publishing companies, which are responsible for the production of 11 didactic collections chosen by 172 municipal schools.

The information on the authors' education was obtained mostly through the curricula available on the Lattes Platform, provided by the National Council for Scientific and Technological Development (CNPq), which aims to integrate curricular databases to concentrate scientific information from scholars, research groups, and institutions across the country into a single system. Information from 11 authors was collected via this platform, and information from the other 9 authors, who are not registered on the platform, was obtained from the brief curriculum published in the textbooks. The publication of the authors' curricula in textbooks is a PNLD requirement.

The information gathering favored two aspects for analysis: the authors' academic background (undergraduate and *stricto sensu* grad-

uate) and professional experience as a teacher in basic education: Elementary School 1, Elementary School 2, and High School, as well as their experiences with Higher Education, distance learning, and other roles related to teaching, such as preparatory courses for college entrance exams, pedagogical coordination, and direction. To carry out the treatment and analysis of the information collected, we used the thematic categorization technique (Gibbs, 2009) and organized the data into two main categories of analysis: (1) Academic background and (2) Professional experience in basic education.

Results and Data Discussion

Academic Background

As for the academic background of the authors, shown in **Table 1**, it was found that 32% have training in the area of Biological Sciences, 23% in Pedagogy, 5% in Physics, 5% in Modern Languages, 5% in Social Communication, 5% in Social Sciences, 5% in Geography, 5% in Philosophy, 5% in Arts Education, and 14% in Mathematics. Of these authors, 2 have two academic trainings: (1) Arts Education and Pedagogy, and (2) Social Communication and Biological Sciences. The total number of training was included in order to verify the diversity.

Book (No. of author(s))	Undergraduate	Master	Doctorate
B1 (1)	Biological Sciences	Genetics and Evolution	Science and Mathematics Teaching
B2 (1)	Social Communication and Biological Sciences	–	–
B3 (2)	Social Sciences Biological Sciences	–	–
B4 (1)	Biological Sciences	Genetics and Molecular Biology	–
B5 (2)	Modern Languages Pedagogy	2 Science and Mathematics Teaching	2. Science and Mathematics Teaching

Book (No. of author(s))	Undergraduate	Master	Doctorate
B6 (1)	Biological Sciences	Science teaching	–
B7 (1)	Geography	Urban Geography	–
B8 (2)	Mathematics Mathematics	2 Science Teaching and Mathematics Education	2 Science and Mathematics Teaching
B9 (1)	1. Biological Sciences	Science and Mathematics Teaching	–
B10 (5)	Biological Sciences Pedagogy Philosophy Arts Education and Pedagogy Physics	5 (no info)	–
B11 (3)	Pedagogy Pedagogy Mathematics	3 Mathematics Education	–
Total (20)	100%	45%	15%

Table 1. Academic background of the authors of the analyzed textbooks.
Source: The authors (2021).

Regarding their *stricto sensu* training, nine authors have a master's degree and three have a doctorate. The titles of their dissertations or theses were analyzed (**Table 2**) in search of references to the Teaching of Natural Sciences or the area of school book studies.

Author (A)	Dissertation title (year)	Thesis title (year)
A1	Effect of temperature on sex determination of *Sciara ocellaris* (1995) (Original in Portuguese: Efeito da temperatura na determinação sexual de *Sciara ocellaris*).	Texts and reading in Science education: contributions to scientific literacy in its most fundamental sense (2007) (Original in Portuguese: Textos e leitura na educação em Ciências: contribuições para a alfabetização científica em seu sentido mais fundamental).

Author (A)	Dissertation title (year)	Thesis title (year)
A2	Morphological, cytogenetic, and molecular analyzes in species related to *Rhynchospora tenuis*, section Tenues (Cyperaceae) (2011) (Original in Portuguese: Análises morfológicas, citogenéticas e moleculares em espécies relacionadas à *Rhynchospora tenuis*, seção Tenues (Cyperaceae)).	–
A3	Interaction in Mathematics classes: a study on constitutive aspects of the interactive process and its implications for learning. (2008) (Original in Portuguese: A interação nas aulas de Matemática: um estudo sobre aspectos constitutivos do processo interativo e suas implicações na aprendizagem).	Public policies for continuing education of Mathematics teachers in the early years: an experience of the Municipal Department of Education of São Paulo (2015) (Original in Portuguese: Políticas públicas de formação continuada de professores dos anos iniciais em Matemática: uma experiência da Secretaria Municipal de Educação de São Paulo).
A4	The National Textbook Program-PNLD: impacts on the quality of public education (2009) (Original in Portuguese: O Programa Nacional do Livro Didático-PNLD: impactos na qualidade do ensino público).	–
A5	Cultural elements in the political humor of the program *Casseta & Planeta, Urgente!* (2006) (Original in Portuguese: Elementos culturais no humor político do programa Casseta & Planeta, Urgente!).	–
A6	Mathematical and Semiotic Modeling: some relations (2008) (Original in Portuguese: Modelagem Matemática e Semiótica: algumas relações).	A semiotic interpretation of Mathematical Modeling activities: implications for meaning attribution (2013) (Original in Portuguese: Uma interpretação semiótica de atividades de Modelagem Matemática: implicações para a atribuição de significado).

Author (A)	Dissertation title (year)	Thesis title (year)
A7	The interdisciplinary approach in science books for Elementary School (2015) (Original in Portuguese: A abordagem interdisciplinar nos livros de Ciências do Ensino Fundamental).	–
A8	Continuing distance education for Science teachers of Elementary School I in Brazil (2006) (Original in Portuguese: Formação continuada à distância para professores de Ciências do Ensino Fundamental I do Brasil).	–
A9	Mathematics in a school organized by cycles of human formation (2005) (Original in Portuguese: A matemática em uma escola organizada por ciclos de formação humana).	–

Table 2. *Stricto sensu* training of the authors.
Source: The authors (2021).

Regarding teaching in the area of Sciences, seven works were found: two related to the area of schoolbook studies; one on scientific literacy (thesis) in scientific dissemination texts; one on continuing education; and the other three in the area of mathematics teaching.

Professional experience in basic education

Regarding the performance in education, there were references to Elementary School 1 (15%), Elementary School 2 (30%), High School (20%), Higher Education (40%), tutoring in distance education (5%), preparatory courses for college entrance exams (5%), no teaching experience of any kind (5%), and no information found (5%), as shown in **Table 3**.

Book (No. of author (s))	Teaching Experience
B1 (1)	Elementary School 2 and Higher Education
B2 (1)	No experience
B3 (2)	1. Elementary School 1 2. Elementary School 2
B4 (1)	Elementary School 2 and High school
B5 (2)	1. Elementary School 1 2. Higher education
B6 (1)	Elementary School 2 and High school
B7 (1)	No info
B8 (2)	1. Tutoring in Distance Education 2. Higher Education
B9 (1)	Elementary School 1 and High School
B10 (5)	1. High school and preparatory course for college entrance exams 2. Pedagogical coordination 3. No info 4. Elementary School and Higher Education 5. Higher Education
B11 (3)	1. Higher Education 2. Higher Education 3. Higher Education and Pedagogical Direction
Total (20)	90%

Table 3. Teaching experience of each author.
Source: The authors (2021).

These data from the curricula analyzed show textbook authors' limited experience with teaching in the early years, portraying the distance from this level of school education. Thus, some questions arise, such as: wouldn't the teaching experience be relevant for the production of these materials? Is the experience with didactic materials valid and is the experience linked to the school context not valid? Why is the voice of teachers not expressive in this context of textbook production? Which elements of the pedagogical practice are or are accordant with the textbook?

The teaching experience is an important factor in the authorship of textbooks because only the knowledge derived from the academic background in teaching degrees does not offer the necessary knowledge that is inherent to the pedagogical practices of teachers in elementary schools. The incorporation of teaching knowledge together with the production of textbooks aims to relate the teacher's knowledge to his/her main work tool.

In this sense, Tardif (2003) states that the teacher is a plural professional and this plurality comes from several sources and different moments of his/her professional life, mainly from his/her daily practice in their work environment and from his/her competencies. Combining this plurality of knowledge, professional experience serves as a foundation for the acquisition and production of knowledge, which can be mobilized for the production of his/her work tool.

Within these characteristics, and the strong relationship between teachers in the early years and the textbook, this artifact is overvalued as a didactic/pedagogical instrument in our school culture. In this situation, Natural Science classes seem to be based on a technicist pedagogy model, based on a positivist philosophy, characteristic of a model of analytical thinking.

If we relate the authors with no training and experience to the public to which they write, it can be pointed out that their activities are similar to those of a technician who produces materials, to the rigors of the norms established by the PNLD, to be evaluated. As for the teachers, if there is no awareness on the part of those responsible for the initial and continuing education courses, by calling them to participate in discussions related to this theme, they would have the role of mere replication.

The data show the need for research that seeks to understand which elements of the teaching practice are brought to the production of textbooks, since many of these authors lack the necessary experience in the area, being necessary to reflect on the theoretical concepts that guide this production and on how these authors identify with the practices developed in the basic education.

Thinking about the concepts of pedagogical practice that point to the transformations of human and social relations and not those of conservation, lesson plans should explain their intentions, both for the subjects and the contents thought and planned consciously for the desired transformation.

In order to think beyond this dominant paradigm, that is, from a positivist and technicist conception of thinking, a good pedagogical practice needs to be thought of in a way that the textbook is not the only resource to be used in the classroom. The results of this work show evidence that the complex issues that have involved textbooks and authorship for years continue to be perpetuated, such as the fact that many authors have no training and experience in the areas in which they produce. The level of education for which these materials are written, the initial years of Elementary School, draws attention because, for this level, the textbook has a great significance, given the training characteristics of many of the teachers who teach Natural Sciences.

Conclusions

The concepts that apply to the pedagogical practice point to two different aspects, that is, on the one hand, for the conservation of relations and, on the other, for their transformation. The transformative pedagogical practice is a political act, full of intentions, from subjects and contents, thought and planned consciously. It refers to epistemological, theoretical, and methodological models that guide the teaching action and thinking. Further, studies on the profile of textbook authors are necessary, as this analysis allows an understanding of certain historical, sociological, and professional training aspects.

Thinking about the teaching practice that aims at transformation, this problem can be overcome depending on the treatment that will be given to these materials and it will be up to the institutions of initial and continuing education to bring this theme to the light of the discussions.

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DISCIPLINARY DIDACTICS – PHYSICS

8.
The Teaching of Physics in Brazil as a Field: Is the Textbook a Scientific Object in Dispute?

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ABSTRACT

The textbooks used for teaching Physics in Brazil have been studied strongly since 2009 when the Textbook National Program (PNLD) began to distribute these textbooks free of charge to public schools. From this context and with the support of conceptual instruments from Pierre Bourdieu's sociology (2004), we ask: What is the space occupied by textbooks in this specific academic field? Who are the authors of the textbooks circulating in the field? As a scientific object, is it disputed by the agents of this field? To answer the questions, the research proposed: a) identify researchers dedicated to the topic through a systematic review to locate papers on textbooks presented at the National Symposium on Physics Education (1970-2020) and at the Research Meeting on Physics Education (1986- 2020); b) identify authors and textbooks approved by the PNLD (2009-2020); c) analyze the position of these authors in the academic Field of Physics Teaching. The results pointed out that the physics textbook is a research object that has been studied in the Field of Teaching Physics particularly by new researchers; and it explores elements to identify the few high-leveled agents that effectively dispute the object in this academic field.

KEYWORDS: *Teaching Physics as a field; Physics textbooks; Textbook authors.*

Introduction

In Brazil, the National Program for Textbooks and Teaching Materials (PNLD) is a key and determining element in the discussions around textbooks. The federal program regulates the processes related to the textbook, and this condition produces specificities and particularities in the Brazilian research about this theme – not only

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because of the country's characteristics but mainly due to the characteristics and effects of this national policy.

The PNLD evaluates, buys, and distributes textbooks for Elementary School's students (from 6 to 15 years old) and for High School's students (from 15 to 18 years old). Moreover, it is necessary to highlight that, although the program distributes textbooks for all school subjects, this study focus its attention on the physics' textbook, therefore this text considers the decisions and transformations in the PNLD since 2009, when the physics textbook was integrated into the program. This empirical study has analyzed PNLD guidelines and studies on textbooks that were published until 2020, since in 2021 there were major structural changes on all High School textbooks, those which were not subject to the empirical study conducted.

Another essential element is one which, the volume and characteristics of the Brazilian textbooks research is deeply related to the PNLD's financial dimension. In 2020, around 150 million textbooks were distributed, which meant an investment of around 1.4 billion BR real (around 270 million US dollar) made by the government, using the National Fund for Education Development (FNDE). From a quantitative point of view, the free of charge nationwide distribution of the program produces effects in the textbook's presence in public schools. It is affirmed that the program has universalized this resource to economic vulnerable social groups, those who once had this access denied or hampered in others historic moments.

It is also high lightened that PNLD has control over the production and distribution of textbooks, which has effects in the contents of these books, whether from the point of view of school knowledge, pedagogical conception and cultural element put into circulation in the schools with the approval of the Federal Government. In that regard, it is necessary to underline the complexity of the Program, which materializes the disputes that overlap the political, intellectual, economic and symbolic Brazilian fields.

These elements stress the relevance of research on textbooks in the Brazilian's specific conditions and indicate the path to be taken in each case. With the support of conceptual tools from Bourdieu's sociology, the research sought to analyze relations between this cultural object and its presence as a research object in the Field of Physics Teaching.

Theoretical Framework

From this introduction about the production context in which a significant part of the researches about textbooks in Brazil situate, the theoretical and methodological elements are presented in a synthetic form in an effort to allow the enunciation of the questions and objectives of this study.

The first question concerns the textbook conceptualization and functions. The specialized literature points out the difficulties of conceptualizing this object (Johnsen, 2001; Choppin, 2000; Batista, 2002, among others), as a consequence of this complexity that characterizes the diverse set of resources and materials that can be associated to the concept. In the Brazilian case, the studies from NPPD/UFPR have been using the broader concept of School Manuals to include at least three subgroups: textbooks (used by students in schools), Pedagogical Manuals (used in teachers' education) and the Didactic Manuals (used to guide teaching).

From the complexity of the object and difficulties of conceptualization derives the second question, related to the functions exerted by textbooks, in school life, but also in social life. The primary contributions on this topic derive from historical studies and relate textbooks to the definition of curricula and teaching contents, to the ways of teaching these contents, and beyond this, to the diffusion of cultural elements, values, and world conceptions.

These two elements highlight the importance of developing studies about the production and circulation of this object, which remains as a present element in the school life since the advent of the mass school. With the production of school subjects, the manuals are a result of the creation and strengthening process of the school institution, moreover they are producers of the relation forms from culture and knowledge, established by the existence of a specific place to its transmission – the school. Recognized for its relevance in the schooling process, the School Manuals, among them textbooks, started to gain the researchers attention only few decades ago.

In Brazil, as a result of PNLD actions, the textbook can be sociologically conceptualized as an object that circulates in the school's quotidian life and, in this conceptual direction, its presence can be characterized by the typical invisibility of this social life sphere (Hel-

ler, 1972). But in regards of the same Program, textbooks gradually became a valued object of research, with a significant growth in academic production on the theme.

In this context, this study sought to turn naturalized processes into strange ones, especially regarding the existence of this object in a specific field, in this case, the Field of Physics Teaching. Put differently, it was sought to build a problematic that would allow an analysis of the relations between the agents, institutions, and the textbook, using conceptual tools from Pierre Bourdieu's sociological theory.

Based on the author (Bourdieu, 2004), this study appropriated the concept of field to define the social space in which knowledge about Physics Teaching is specifically produced. This means that, recognizing the difficulties of a consensus on this theme, it is accepted the existence of "some essential and relatively invariant elements of the definition of field", in the direction pointed out by Lahire (2017, p. 65) in his elaborations from the set of Bourdieu's works on the subject. The author indicates elements that characterize a field, reproduced below in summary form:

a) It is a microcosm included in the "global national or, more rarely, international social space" (the macrocosm).

b) "Each field has specific rules of the game and specific challenges"; interests are always specific to each one.

c) It is a "structured space of 'positions' occupied by the different agents of the field". The practices and strategies of the agents can only be understood if related to the positions.

d) It is a space of struggles, an arena "where a competition or contest between agents is at stake", with the purpose of disputing and appropriating the field's specific capital.

e) Capital is distributed unequally, and this "determines the structure of the field", thus defined "by the state of a historical relation of forces", between agents and institutions in confrontation.

f) Even in struggle, there is interest in the existence of the field.

g) "To each field corresponds a habitus (system of incorporated dispositions) proper to the field", a condition for playing the game.

h) "Every field has a relative autonomy", producing its own logic in relation to the struggles, even if they are also marked by forces outside the field.

Still on the theoretical framework of the study, although there is no consensus on the issue, we used the notion (or concept) of subfield, which, according to Passiani and Arruda (2017), is admitted by Bourdieu, although it was rarely employed by him.

In the study carried out, once the Physics Teaching was understood as a field, some of its specificities were handled from the concept of subfield. Therefore, based on the agents, institutions and symbolic production of the field, two subfields were defined as a result of the dialogue between Bourdieu's theory and the empirical studies about physics textbooks: the subfield of Research in Physics Teaching and the subfield of Didactic and Methodology of Physics Teaching.

Based on these elements, the research questions were formulated: a) Who are the researchers interested in physics textbooks in Brazil? b) Who are the authors of these books that circulate in the field? As a scientific object, is it disputed by agents in the field?

Methodology

Methodologically, this is a documentary study and has exploratory character, once the intention was to identify the disputes related to the physics textbook as an object of the Field of Physics Teaching. The research objectives were the following: a) identification of scientific papers about the physics textbook presented in the two main congresses of the Field of Physics Teaching; b) identification of authors and physics textbooks approved by PNLD in four editions, from 2009 to 2020; c) analysis of the authors' position in the Field of Physics Teaching.

The empirical material were the proceedings of the National Symposium on Physics Teaching and the Physics Teaching Research Meeting, documents necessary to carry out the systematic review of the studies on the theme. These events were selected for their significant symbolic value in the field and are considered the two main national events for the presentation of papers related to Physics Teaching. The proceedings of these events are available on the website of the Brazilian Physics Society (https://sbfisica.org.br/v1/sbf/). Inside these proceedings a search was made to select the studies which had

"School Manual" as theme and, mainly, the textbooks. A full read of these studies was made. As for the papers gathered, although the initial survey occurred in all the editions from the events, it was decided that the timestamp for the authorship analysis would only be done from 2015 to 2020 publications. Within this period, it was understood that there was a more solid production on textbooks studies, and due to this fact, it made more sense to analyze the quantity of papers, as the themes were more well established.

To meet the other study objectives, the PNLD guidelines were analyzed. These guidelines present and describe the books approved in each edition of the PNLD in the years 2009, 2012, 2015, and 2018. It is important to highlight that the textbooks approved in this last edition remained in the school until 2020. The PNLD Guidelines can be found on the FNDE's website, responsible for the Programs actions (https://www.fnde.gov.br/programas/programas-do-livro). From these guidelines, it was possible to identify the authors of each book and, finally, to perform the analysis of their resumes available in an official, online, public and academic database (Lattes Platform), to verify the relationship of each one with teaching and research in the Field of Physics Teaching. The results of each search were arranged in charts and tables, from which the data were systematized, and the analyzes were performed, leading to the search for the answer to the question that makes up the title of this text: is the textbook a scientific object in dispute?

Results and Data Discussion

As a result of the documentary analysis, the data produced to achieve the objectives are presented separately in each session below.

a) The systematic review to analyze the presence of manuals in the academic production of the Field of Physics Teaching pointed 108 papers presented in the two selected events between 2015 and 2020. Categories were defined to distinguish the focus of the papers after reading each one of them. The categories found and the quantity of papers in each one of them are expressed (**Table 1**) below.

Categories (research focus)	Number of studies
Analysis of the teacher's manual	2
Analysis of the textbook content	74
Analysis of the textbook content of College education	5
Analysis of the pedagogical conceptions of the textbook	4
Academic degree of textbook authors	1
Textbook Policies	3
Choices and uses of the textbook	12
Production of teaching materials	3
Review of textbook research	3
Analysis of the Brazilian textbook field	1
Total	108

Table 1. Quantity of papers with textbook as theme.
Note: Adapted from Lous (2022).

In a synthetic way, some information about the categorization is included: the category "Analysis of the teacher's manual" is relative to studies that deal with teacher's guidance manuals, especially those that are articulated to the textbooks by the requirement of the PNLD public notices; the category "Analysis of the textbook content" refers to researches that address issues related to the textbook contents in a broad concept, and a specific one was established for those that carry out analysis of the textbook contents for use in College education, still not quite focused in Brazil; the category "Analysis of the pedagogical conceptions of the textbook" groups works that analyze both the conceptions of teaching and the conceptions of learning contained in the textbook; "Production of teaching materials" is the category that groups researches concerned with the production of teaching materials including among them the textbooks, but not exclusively; "Review of textbook research" refers to systematic review research on the topic, such as state-of-the-art research; and only one research used the field concept to analyze the textbook, evidencing that this theoretical tool can still be explored for the study of the topic.

Although the categories for organizing the data have been broadly defined, they allow us to indicate the purpose – or main focus – of

each analysis carried out by the authors of the studies. From the synthesized data, it can be stated that there is a significant amount of research on physics textbooks. In the analyzed proceedings, research on the physics textbook represents from 3 to 8% of the total research, in each edition of the events. This statement considers that the inclusion of Physics in the PNLD occurred about a decade ago, a relatively short time when compared to other disciplines such as mother tongue or Mathematics that have been part of the Program since 1985.

It should be noted that authors such as Garcia (2013) understand the inclusion in the PNLD as an element that induces research on the subject. In addition, research is characterized by the diversity of authors, theoretical references, and thematic focus on the physics textbook. This can be attributed to the fact that the subject is in a process of expansion in the field. It should however be noted that there is a thematic concentration around the analysis of the contents of textbooks and there are gaps in other themes – such as policies and uses.

b) As we have analyzed PNLD guidelines from 2009, 2012, 2015 and 2018, we have encountered 53 different authors. Of those, 15 are college professors and 35 are high school teachers. About the others, no confirmable information is presented, or they may not be teachers, so they were not counted. This data suggests that the authorship is less disputed by professors that are also researchers and would be the agents with largest capital for knowledge production in the field. On the other hand, the massive presence of high school teachers suggests that the authorship of textbooks does not represent a valuable capital accumulation in the research field.

Conclusions

Based on the results, it is stated that in relation to the subfield of Research in Physics Teaching, the transformations have affected the configuration regarding the physics textbook as a research object. It is noteworthy that in the last decades it can be observed the valorization of actions to preserve textbook collections, such as the creation of the Textbook Library/FEUSP, Livres Project, and the Memorial of the National Textbook Program/Federal University of Rio Grande do Norte, which include books of all school subjects; there are

also research groups articulated around this object, some with punctual productions and others with continuous production – such as NPPD/UFPR, which is composed, also, by researchers from the Field of Physics Teaching.

The last two decades have been characterized by an increase in the production of research on textbooks, as shown in the minutes from both events analyzed – SNEF and EPEF. These two events, supported by the Brazilian Society of Physics and organized in intercalated years, were created to provide answers to the problems of Physics Teaching. To reveal part of the disputes in the field, it was registered that the first one to be created was the National Symposium on Physics Teaching – SNEF, in the 1970s, which has its editions characterized by the participation of researchers, teachers and teacher educators. The second one, Research Conference on Physics Teaching – EPEF, was created later on with the intention of constituting a specific space for researchers, to scientifically discuss issues of the field – certainly revealing itself as a force for raising each individual agents capital linked to College education and post-graduation. Therefore, it can be stated that these events have relevance in the Field of Physics Teaching, especially to strengthen agents and capitals in the subfield of Research in Teaching.

It was observed that there was an increase of researches about the theme in the last five years and, therefore, this quantitative result can be taken as an indication that in the subfield of Research in Physics Teaching the textbook has gained relevance as a scientific object, since the data showed there were more agents producing and more productions about this theme. Some names remained as highlights throughout time, in both the two events or privileged in one of them, many recognized for the formative role they played in their actions in College Education, either in the teachers education or in the researchers education.

These five decades have certainly shaped habitus, fights, disputes, strategies and capitals in this specific field. From the analysis of the empirical material produced, it was observed that the characteristics of the events and the papers presented allow us to identify two main axes of strategies for the constitution of the field, which suggest the configuration of the two subfields referred to: a set of scientific interventions centered on teaching, privileging didactic processes, relations and objects; and another set of scientific interventions centered

on the production of knowledge about Physics teaching, privileging the discussion of research, its themes and approaches.

From the results it is possible to point out the existence of a distinction between those who research about textbooks and those who produce them. There is a predominance of high school teachers as authors of physics textbooks and only a minor part of the authors of the collections present scientific publications on Physics Teaching, indicating the presence of different agents in action in the subfield that privileges research and in the subfield that privileges the production of textbooks.

On the other hand, the predominance of textbooks with the same authorship that remained in three or four editions that occurred between 2009 and 2018, which represent 68% of the total number of textbooks approved in all PNLD public notices, also indicates in the subfield of Didactic and Methodology of Physics Teaching this object is little disputed. The data thus allowed us to contrast the relevance of the Textbook in school life, in classes and in the PNLD with its valuation in the Field of Physics Teaching, in the two subfields analyzed.

It is stated, in conclusion, that the physics textbook is not yet a scientific object in dispute. Among the results that support the statement, we highlight that there are few agents in higher positions of the field who effectively dispute this object in the Field of Physics Teaching Research. The papers presented at the SNEF and EPEF were produced by students, teachers or beginner researchers. Only a few more established researchers in the Field of Physics Teaching produced research on this theme. Moreover, only a limited group of authors has physics textbooks approved by PNLD, which indicates the object is not disputed among physics teachers either.

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9.
Modern and Contemporary Physics in Textbooks: Contributions to Physics Teachers Education

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Nilson Marcos Dias Garcia[***] and Alisson Antonio Martins[****]

ABSTRACT

Teachers often face difficulties in carrying out their activities and development of certain teaching contents, generating a feeling of lack of capacity and even avoidance of addressing these contents or presenting superficial approaches (Rocha & Ricardo, 2011). In many cases, to face this situation, the teacher uses more accessible materials, such as textbooks and guidance manuals, in order to complement the knowledge and develop them. In this context, we report a research in progress that aims to investigate how the guidelines for teachers present in the physics textbooks relate to pedagogical practices, thus showing its importance in the initial and continuing education of teachers, especially with regard to the contents of Modern and Contemporary Physics – FMC, little worked on in High School in Brazilian public schools. Among physics textbooks approved in the Brazilian National Textbook Program – PNLD of 2018, the three collections of physics textbooks most chosen by teachers in Paraná, and their respective guidance manuals for teachers were adopted as the object of investigation. A content analysis of these textbooks was performed giving special attention to the methodology suggested by the authors for the development of these subjects. Then, we analyzed how the contents of Modern and Contemporary Physics have been presented in these textbooks and in their respective manuals, and the guidelines for the development of these teaching contents by teachers in their pedagogical activities were verified. It was also checked whether the themes were approached in a historical context, taking into account the social, political and scientific dimensions and identifying the applications present in the textbooks and whether they were adequately related to the theme. Finally, it was analyzed whether the information in the Teacher's Manual supports the approach to the subject, in terms of didactic and methodological guidelines. In this way, it is expected that this research can contribute to the presentation of importance of the physics textbook in school and academic context, so that the future teacher will have knowledges and encouragement to develop a close relationship with this object of school culture since its initial education, learning to analyze, to choose, to value and to use it properly.

KEYWORDS: *Modern and contemporary Physics; Teacher education; Textbooks; Physics teaching.*

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Introduction

One of the main teaching tools available to all teachers and students for free is the textbook (Carvalho, 2007). In some realities, perhaps this is the main resource that the teacher uses in the classroom. The textbook may often be the only book with which students have contact throughout their formative years. Thus, the importance of this instrument in the context of Brazilian public schools is undeniable. Moreover, some factors, such as the precarious working conditions and remuneration of teachers and the gaps in their training, contribute to the fact that, especially in public schools, the textbook is the basic support and even the only reference for teachers in preparing their classes (Ostermann, 2004).

Libâneo (2002) points out that the textbook is an important tool for both the teacher and the student. It is through it that the teacher can reinforce his knowledge about a theme or follow pedagogical guidelines on how to present it in the classroom. For the student, the textbook brings the content in a systematized way, with exercises to fix and reinforce the knowledge acquired in class. Thus, the textbook assumes a primary role in the classroom, by organizing the content of everyday life and filling possible gaps in the initial and continuing education of teachers.

The Brazilian National Textbooks Program (*Programa Nacional do Livro e do Material Didático*, in Portuguese, hereafter PNLD), created in 1985, aims to evaluate, select, acquire and monitor the distribution of teaching materials to all teachers and students in Brazilian public schools, which requires a high investment from the Federal Government. Thus, considering the size of the Program and the importance that textbooks play in school life, we must take a critical look at them in order to perceive their limits and potentialities in assisting the teacher in the teaching-learning process of the various school subjects.

Among these subjects, the topics of Modern and Contemporary Physics (MCP) stand out, whose insertion in High School is extremely relevant in the student's citizen and scientific education, since it awakens the student's interest and curiosity, mainly because it presents many technological applications present in their daily lives. Understanding that the subjects of Modern and Contemporary Physics

are not trivial, Terrazzan (1992) argues that one of the ways to introduce this subject is through approaches that contextualize it historically and socially.

Thus, aiming to verify how MCP subjects are presented in textbooks, three Physics collections approved by the 2018 PNLD were selected, in which both the textbooks and their respective pedagogical guidance manuals were analyzed.

The objectives of the research were to investigate the pedagogical guidelines presented to teachers in the textbooks selected and to highlight the importance of pedagogical guidelines in the initial and continuing education of teachers, especially with regard to the contents of MCP. Throughout the research it was verified if the contents of MCP are present and how they are presented, if they are distributed in a didactic sequence that facilitates the students' learning, if the authors contextualize the themes in the historical, social, political, and economic dimensions, and if the text transmits values that favor the formation of an environmental awareness in the students.

Textbooks: School Culture Artifacts

The school can be understood as a social construction (Ezpeleta & Rockwell, 1989), the result of interactions between different forces and actors. It is where culture is reproduced, one part being predetermined by political institutions and materialized through the prescribed curriculum, and the other part being the result of local reactions and adaptations to this curriculum.

According to Julia (2001), school culture constitutes a

set of norms that define knowledge to be taught and behaviors to be inculcated, and a set of practices that allow the transmission of this knowledge and the incorporation of these behaviors, norms and practices coordinated to purposes that may vary from time to time (religious, sociopolitical or simply socialization purposes) (Julia, 2001, p. 10).

This knowledge is selected, decanted and crystallized by the school. Forquin (1992) states that the role of the school is to identify,

consecrate, and transmit the knowledge of the human cultural tradition, and it is in this way that the conservation and transmission of the cultural heritage of the past is perpetuated, aspects that, in part, are played by textbooks.

Considering that in Brazil, due to Constitutional Amendment no. 59 of 2009, both Primary and High School are compulsory, and as a result of the PNLD, a public policy that guarantees free access to the textbook, we can state that, especially since 2009, practically everyone who has gone through a schooling process has had the opportunity to establish contact with some kind of textbook.

In this context, we understand the need to use textbooks not only as bibliographic sources for academic research, but also as objects for in-depth studies, with a critical and attentive view.

Approach to Modern and Contemporary Physics in Physics Teaching

The approach of Modern and Contemporary Physics (MCP) topics in High School has the potential to awaken students' interest in Science, especially because it involves applications that meet the students' reality, since almost all current technologies are based on principles of this Science. Thus, introducing these topics in the classroom and contextualizing this scientific knowledge with what the student sees in everyday life becomes essential for the development of Scientific and Technological Literacy, preparing them to position themselves critically in modern society (Pereira *et al.*, 2019).

In this sense, several researches point to the need of inserting updated topics of Physics in the curriculum. Terrazzan (1992, p. 212), one of the precursors of this concern, argues that the approach of these topics should be done by means of contextualization, in particular by using the History of Science. Currently, all books approved by PNLD bring topics of Modern Physics, not being guaranteed, however, that they are approached by the teacher in the classroom.

During the basic education of physics teachers, we have a quick contact with MCP topics, because the subjects that deal with these

topics, in general, are offered at the end of the courses, and, also in general, they obey the chronological order of the Science evolution, Classical Physics first and then Modern Physics. However, undergraduate Modern Physics is loaded with a mathematical language, making it often tiring to follow the theoretical explanation and solve the lists of application exercises, often only numerical. Thus, there is no time for debates and exchanges of ideas about the theories and how the process of Science evolution happened, because the classes are generally traditional, where the blackboards are filled and erased many times in a very short period of time.

When we become teachers, we initially try to reproduce what we have learned, believing that students in basic school will have the same interest or responsibility in learning Physics as we do, with a lot of content and little interaction. Then we come across, in the classroom practice, the lack of interest, the mess, the disorder, and we realize that the teaching process in school is different from the one we were subjected to. In this sense, there is a need to research ways of teaching that attract students, arouse their interest, and make the content meaningful to them.

In Physics we have the experiments, which are great for getting away from the routine, they are a bit of work and they shake up the classroom, but they always pay off in the end, because we observe a different attitude from the student, who becomes active in the process and understands what he is doing. But this strategy cannot always be used, mainly due to lack of time and resources.

Another way to make teaching physics attractive is by teaching topics that are in the media or that are related to the students' daily lives, such as black holes and time travel and wormholes. These topics are covered by MCP and are not trivial, which scares many teachers because they do not fully master the subject. Thus, one of the ways to fill this gap in our training is to resort to the textbook, because it is a material that is available to the teacher and to the student, does not need special resources such as internet access and is guaranteed for everyone.

Thus, we understand the importance of the textbook in the school context, as it contributes to student learning and in the continuing education of teachers, helping them in their planning and preparation of classes.

Methodology

The research, qualitative and documental in nature, analyzed how the themes of Modern and Contemporary Physics are present in three physics textbooks, for the 3rd grade of High School, taken as object because they are the textbooks most chosen by teachers in public schools in the state of Paraná.

The selected books were:

Figure 1. *Física* (Physics), by Bonjorno and other authors (2016)

Figure 2. *Ser Protagonista* (Being a protagonist), by Válio and other authors (2016)

Figure 3. *Física Aula por Aula* (Physics Class by Class), by Barreto and Xavier (2016)

The methodology used was Content Analysis (Bardin, 2002), which covers three steps: pre-analysis, exploration of the material, and data treatment, inference, and interpretation.

In the pre-analysis, a floating reading was made in the summaries of the selected books to identify if the theme was present and where it was located. Then, the material was explored, reading in depth the chapters that contemplated the theme, identifying some pre-defined categories. Finally, tables were prepared to help in the analysis and interpretation of the results.

The analysis was done according to previously defined categories:

– *Presence* of the contents of Modern and Contemporary Physics, which aims to verify whether the books present these contents or not.

– *Presentation* of concepts, analyzing how the contents are presented, either conceptually or practically.

– *Context and applications*, verifying if a historical contextualization is made when approaching the themes, taking into account the social, political and scientific dimensions, and identifying the applications present in the books and if they are adequately related to the theme.

– *Teacher's manual*, analyzing how this resource supports the teacher in approaching the theme, with regard to didactic and methodological guidelines.

Results and Data Discussion

Considering the first category, the presence of Modern and Contemporary Physics topics, the following results were verified:

– Physics (Bonjorno *et al.*, 2016) textbook contains four units with 266 pages in total, with the last unit devoted to MCP content with 64 pages, which represents approximately 24% of the book. The topics covered are Restricted Relativity Theory, Quantum Physics and Radioactivity and are divided into three chapters.

– The 253-page Class-by-Class Physics (Barreto & Xavier, 2016) textbook consists of five units, the last of which is entitled Modern and Contemporary Physics. It contains three

chapters, Restricted Relativity Theory, Quantum Physics, and Nuclear Physics, in 45 pages representing 18% approximately of the total textbook.

– The textbook Being a Protagonist (Valio *et al.*, 2016) has 319 pages and three units. The last of these is devoted to Modern Physics, with two chapters: Physics in the 'small world' and Physics 'very big', on 47 pages, approximately 14% of the total.

Regarding the second category, the presentation of concepts and how they are presented, it was found that:

– The MCP content of the physics textbook is presented in a more conceptual way, including exercises presented in a more conceptual way, not being frequent questions from college entrance exams and from the High School National Exam (*Exame Nacional do Ensino Médio*, in Portuguese, hereafter ENEM). The textbook presents a box of complementary readings and there are no suggestions for practical activities.

– The textbook Physics Lesson by Lesson presents objective discussions and always begins with a brief historical contextualization. The exercises are conceptual, not often being questions from vestibulares and ENEM. The book does not present suggestions for simulations or experiments.

– The textbook Ser Protagonista also opts for a conceptual and contextualized presentation. However, unlike the others, it presents questions from college entrance exams and ENEM. It also presents suggestions for experiments and projects to be developed in groups.

About the third category, technological contexts and applications:

– The textbook Physics (Bonjorno *at al.*, 2016) presents a technological context at the beginning of the section of each chapter, with in-depth texts. The political context was identified only in the topics of Nuclear Physics.

– In Physics Class by Class (Barreto & Xavier, 2016), the contents are summarized and not sufficiently contextualized. There are no deeper reflections of the social, political, and economic context of scientific development.

– In the textbook Being Protagonist (Valio *et al.*, 2016) there is a strong presence of historical contextualization. It presents

the description of numerous contributions of scientific development to technology, in medicine, agriculture, industry, energy generation, etc.

And finally, in the last category, Teacher's Manual, following the same order as the books presented above:
– There are suggestions for initial approach, suggestions for deepening the theme and planning how to teach. It also presents methodological suggestions for approaching the themes: debate activities, games, simulations, and research.
– Offers additional proposals involving experimental activities, film screenings, and in-depth readings.
– Presents the learning objectives for each topic, suggestions for initial approaches, and websites to supplement the lesson. It also presents a complementary reading box, and suggests other books for reading. There are proposals for teaching sequences and practical activities.

Conclusions

The textbook that best responded to the proposed categories was Being Protagonist, followed by Physics and Physics Class by Class, respectively. Considering an experimental approach in the classroom, the textbook Ser Protagonista (Being Protagonist) is the only one that presents suggestions for projects and experiments. This book also presents an in-depth historical contextualization and several technological applications, contributing positively and guiding the teacher to work in the classroom. In this same criterion, the textbook Physics is satisfactorily contemplated.

Both textbooks, Being Protagonist and Physics, present suggestions for the teacher's initial approach to the MCP theme. Both books also present methodological suggestions and proposals of didactic sequences for the classes. One can consider these textbooks as an orientation guide with step-by-step for the physics teacher to work with MCP in the classroom. They are also the ones with the most complete Teacher's Manual, with a variety of classroom approaches.

In view of the analysis of physics textbooks selected in the PNLD 2018, it can be seen that the organization of the content follows a

traditional teaching logic. And although the textbooks do not have a unique structure, it was possible to locate in all of them the didactic elements that constituted the categories of analysis. The themes of Modern and Contemporary Physics are present in the three analyzed textbooks and can contribute to the training of physics teachers, however, it is necessary to deepen the investigations with other teaching collections that adopt other ways of organizing the teaching contents, which would allow analyzing other possible contributions.

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10.
Physics Teachers' Perceptions of the Digital Textbook

HALINA DOS SANTOS FRANÇA[*] AND ÁLVARO EMÍLIO LEITE[**]

ABSTRACT

This paper presents the results of an investigation about the perception of physics teachers of private schools, affiliated to a Teaching System, on the contributions and challenges of the use of the Physics Digital Textbook (DT) in the teaching and learning process. Digital textbooks are books that can be accessed via electronic devices and that allow interaction among users, management of available resources, learning assistance, and management of the teaching and learning process. The instrument used was a questionnaire with open and closed questions that aimed to obtain information about the academic background, possibilities, difficulties and limitations related to the use of the DT. The questionnaire was sent through a Google Drive form to 85 schools in different regions of Brazil and had 38.8% return, totaling 32 teacher respondents from different schools. The data produced was analyzed and categorized into two groups: the teachers who declared they do not use the DT and those who declared they use the DT in their pedagogical practices. Among the teachers who do not use the DT, the main reasons identified are related to the lack of technological infrastructure, the lack of methodologies that support a logic for teaching with this kind of material, and the school's pedagogical project that has no relation with the use of the DT. On the other hand, the data produced from the teachers who declare they use the DT in their teaching practices allowed the identification of contributions that may encourage other teachers to do the same. Among the results, one can highlight, for example: the optimization of classroom time provided by the use of the DT, the motivation of students and the possibilities of other visualization resources – such as simulators and illustrations that allow the same subject to be approached in different ways. An important and very present fact in the answers of this group of teachers is the importance attributed by them to the possibility of this digital material being downloaded to computers, tablets and cell phones. This was seen as a limiting factor for the frequent use of the DT in the classroom, since until 2020, most schools did not have internet networks that could meet the demands of teachers and students. Taking these results and the experiences of physics teachers as a basis, a reflection was made on the factors that need to be previously thought about for the use of digital textbooks in the teaching-learning process, such as, the need for balanced investment between internet access infrastructure, digital content, teacher training to enhance the use of the digital textbook with students, and increasing the time of each class.

KEYWORDS: *Digital textbook; Digital book; Physics teaching.*

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Introduction

Information and communication technologies (ICT) are increasingly embedded in our society. They are present in most Brazilian homes and, through them, it is possible to access information from different sources. However, due to social inequality in Brazil, there are still students who do not have access to them, being necessary, among other actions, educational investments that guarantee their insertion in the school, since it aims at universalization of knowledge.

This research seeks to identify the reasons that limit the use of Digital Textbooks (DT) by physics teachers from private schools who are linked to an education system and who have access to both printed and digital textbooks. For this, qualitative approach research is developed, according to Flick (2009), with the analysis of communication content, according to Bardin (2010). The data come from the answers to a questionnaire consisting of open and closed questions that were made available online for teachers. The questionnaire is based on the five pillars discussed by Kenski (2012), which are necessary to enhance the effective insertion of ICT in schools: adequacy of infrastructure; change in the teaching logic; structuring of the pedagogical project; investment in teacher training; and support of school management.

The research took place between November 2018 and the first semester of 2019 and had the participation of 32 teachers from 15 federative units: Amazonas, Bahia, Ceará, Distrito Federal, Goiás, Maranhão, Minas Gerais, Mato Grosso, Pará, Pernambuco, Paraná, Rio de Janeiro, Rondônia, Rio Grande do Sul, Santa Catarina, São Paulo, and Tocantins.

The results show that 24 teachers declare using the DT and 8 declare not to use it. Among the reasons for not using it, the following stand out: inadequate infrastructure for the use of the DT; lack of direction and organization of the pedagogical project; and DT content does not add differences in approach when compared to the printed textbook. On the other hand, teachers who declare using the DT point to the following contributions to the teaching-learning process: the possibility of diversifying teaching resources; and the increase in students' motivation and participation in classes.

Theoretical Foundation

The definition of DT, according to Maciel and Verdeaux (2017, p. 33), is not consensual in the current literature, but can be carried out based on the analysis of two aspects: "didactic purposes and characteristics that the material presents" and "in its digital characteristics, resulting from technological advances that provide, over time, new potentialities to the material". In this research, DT is understood as a didactic resource that can contain different media (text, images, videos, simulators, etc.), allows assistance to learning, management of the teaching and learning process, can be accessed through electronic devices, and enables user-device or user-user interaction. Based on this definition, DTs are classified as ICT and their use in the classroom can be understood using the five dimensions discussed by Kenski (2012) for the effective insertion of technologies in school environments.

According to the author, it is not enough to have ICTs and take them to the classroom. It is necessary to invest in *technological infrastructure* that scales the need of that school for the use of those ICTs. It is also necessary to rethink the *logic for teaching*, with differentiated class time and with an adequate number of students, since the "use of the computer and the internet in the short class time for an exorbitant number of students" (Kenski, 2012, p. 73) becomes an "expensive and sophisticated resource that, once again, does not work" (Ibid.). Another point raised by the author concerns the elaboration of a *pedagogical project* that contemplates the use of ICT and has the support of *school management*. The last dimension listed, not in this order, is the *training of teachers* in the use of ICT, which should be initiated in undergraduate courses and continued in schools, so that the teacher feels comfortable and can count on advice and permanent technical support, making it possible to solve problems immediately. Based on these five dimensions, the data production instrument for this research was structured.

Methodology

Definition of the Target Audience

In most schools, it is the teacher who elaborates the methodological approach strategies and plans and directs the pedagogical activi-

ties in the classroom. In this way, he/she is the one who manipulates the DT and forms opinions and concepts about its use, even before preparing guidance for the students. This makes teachers' perceptions of DT gain status of authority. For this reason, the target audience of this research is physics teachers from a private school that provides DT to its students.

The choice of an education system is based on the understanding that these educational structures provide a set of teaching resources that can be purchased by a school that becomes a partner. The agreement with the education system provides: teaching materials (printed and digital); courses for teachers; marketing strategies; study of the school's financial health; pedagogical advice; elaboration of assessments and provision of virtual learning environments. These teaching resources would increase the chances of achieving the teaching objectives proposed by Kenski (2012) in the use of ICT in the school environment. In addition, the choice of a particular education system was related to two factors: the availability of a search engine that allows finding all schools that use material from the education system in high school and the researchers' knowledge of printed and digital resources offered by the education system.

Analysis Instrument

As the schools affiliated with the education system are spread across several Brazilian states, the questionnaire, sent via the Google Drive form, is what suits the objective the best, since it allows reaching the largest possible number of teachers without the need for face-to-face meetings between researchers and participants.

The questionnaire was prepared by mixing closed and open questions. The questions formulated for the questionnaire were designed so that the answers obtained could be analyzed based on the five dimensions that, according to Kenski (2012), need to be rethought when incorporating ICT into the school environment. Thus, the questionnaire was structured in four blocks: 1st – Identification and academic training of the participants; 2nd – Professional performance; 3rd – Didactic material; 4th – two options depending on the answers provided in the 3rd block, i.e. if the participant answered that

he/she uses the printed book, but not the digital one, he/she would be forwarded to the first option of the 4th block, but if he/she answered that he/she uses DT, he/she would go to the second option.

As this is qualitative research in which data are produced through a subjective instrument, we chose to analyze the contents of communications described by Bardin (2010). This method of analysis is organized into three phases: a) pre-analysis, b) exploration of the material, and c) treatment of results, inference, and interpretation.

Results and Data Discussion

Constitution and Characterization of the Sample

Initially, it was necessary to quantify the number of schools affiliated with the education system. For this, the search site was accessed, which contains the register of all schools affiliated with the education system in Brazilian territory. This website was created in 2017, as part of a marketing campaign that aimed to publicize the brand, allowing anyone interested in enrolling their children in a school associated with the education system to find the name, contact, and location of the school.

Using "High School" as a filter, schools that use the education system in all units of the federation were found, totaling 685 schools. Of these, 85 accepted to participate in the research, 50 commented that they were no longer using the High School material that year, and 9 did not authorize the research. The rest did not respond to the contact. The return of 21.02% is within the estimate predicted in the literature, which varies from 20 to 30% (Baptistella Filho *et al.*, 1980, apud Luna, 1997).

The 85 schools that accepted to participate in the research were from 15 federative units: Amazonas, Bahia, Ceará, Distrito Federal, Goiás, Maranhão, Minas Gerais, Mato Grosso, Pará, Pernambuco, Paraná, Rio de Janeiro, Rondônia, Rio Grande do Sul, Santa Catarina, São Paulo, and Tocantins. Seven emails were sent from November 5, 2018, to December 17, 2018. After this time interval, 33 questionnaires (38.8%) were received: 32 from physics teachers and one from a pedagogue, who was excluded from the analysis group because he did not teach Physics classes.

Participants were between 25 and 60 years old, 18 had a teaching degree in Physics (T2, T3, T4, T5, T6, T7, T13, T14, T15, T16, T17, T19, T20, T23, T25, T28, T30, and T32), 3 had a bachelor degree in Physics (T10, T18, and T24), and 5 only reported that they have graduated in Physics (T1, T12, T26, T29, and T31). The other 6 members of the sample have training in other areas, two in Natural Sciences (T9 and T27), one in Biological Sciences (T21), one in Medical Sciences (T11), one in Mathematics (T22), and one in Chemistry (T8).

Most of the interviewees (21 of them) completed a graduate course: 11 specializations, 9 master's degrees, and one doctorate; the others only completed their undergraduate courses. When comparing the number of respondents who have a degree in the area of Education with that of specializations in the area of Teaching, Technology, and Education, it can be seen that 25 of them had contact with ICT disciplines during their training, whether in the teaching degree or graduate course. This data becomes important when 22 of these 25 respondents claim to use DT in their teaching practice, showing that training in the use of ICT is an important factor for teachers to start incorporating DTs in their classes. In addition, of these 22 teachers, half claim to use it more than 40% of the time, either when they are in the classroom or when planning their classes. These data corroborate what Kenski (2012, p. 88) emphasizes about the importance of teacher training for the use of technology: "the teacher who wants to improve their professional skills and teaching methodologies, in addition to their own reflection and updating on the content of the material taught, must be in a permanent state of learning".

Teachers Who Do Not Use DT in Their Pedagogical Practice

Eight teachers claim not to use the DT in their pedagogical practice (T1, T2, T3, T4, T5, T6, T7, and T8). In summary, the reasons given by them are the following: inadequate infrastructure for the use of the DT; teaching logic incompatible with the number of classes; the content of the DT does not add anything to the printed book; the pedagogical project is not organized and directed to the inclusion of the use of DT; and the possibility of replacing DT resources with other ICTs available on the education system portal.

Table 1 summarizes examples of statements about the reasons given by teachers for not using the DT. As the dimensions "teacher education" and "school management", pointed out by Kenski (2012), did not appear in the answers, it was not necessary to insert them in Table 1.

Respon-dents	Technological infrastructure	Logic for Teaching	Pedagogical project
T1		– Preparation of my own material	
T2			– Not adequate to the methodology I use
T3	– No internet access – Do not own a tablet – No tablet at school – No projection system for the digital book at school		
T4	– No internet access		
T5	– Same content in the printed book		
T6	– No internet access – Do not own a tablet		
T7	– The Internet connection is bad where I live		
T8		– Digital text-book is slow	

Table 1. Reasons given by teachers for not using DT.
Source: The authors (2022).

It is possible to raise hypotheses about the non-appearance of the dimensions "teacher training" and "school management" in the teachers' answers. One of them is that teachers receive training and are encouraged to use technologies, but problems with infrastructure, the logic for teaching, and pedagogical design prevent the use of DT in their classes. Another hypothesis is that the problems faced by teachers are still in stages before the necessary training and the incentive they receive for the use of ICT in the classroom and, there-

fore, they cannot perceive whether this training and this incentive are problems to make use of DTs in the classroom. To confirm these hypotheses, it would be necessary to interview the teachers to deepen their understanding of the non-use of DT in their classes, since they have the resources available to use.

Teachers Who Use DT in Their Pedagogical Practice

In the analysis of the responses of the 24 teachers who said they use the DT in their pedagogical practice (from T9 to T32), it is not possible to identify a pattern in the ages – ranging between 25 and 60 years old – or the time of agreement with the education system. Most teachers, 13 of the 24 respondents in this category, have used the material for between zero and three years. This data contradicts, at first, the idea that, if the teacher knows ICTs and feels comfortable using them, they are more likely to include them in their classes. However, a plausible hypothesis that may help to understand this initial contradiction is related to the fact that these 13 teachers work in schools with recent agreements and, in this case, the education system sales teams make good marketing of the DT and ICT available. As it is a new product, the *school management* team can be more curious about the use of ICT, which can encourage this use and make teachers see them as a differential in the school. This fact can be deepened by conducting an interview.

As for the number of classes in this category, 13 teachers answered that they have at least three or more classes per week. This fact is a differential in relation to the category of teachers who do not use the DT, who had a maximum of three classes per week. This may be an indication that, when there are more classes, it is possible to carry out different activities in the classroom that use ICT.

By categorizing the teachers' open responses, it is possible to identify some indications of the contributions to the teaching-learning process pointed out by physics teachers who already use the DT. For example, T24 highlights that DTs contribute to "motivating students to study certain topics", T14 emphasizes the fact that it is "easily transportable", and T20 believes that DTs "make everything much closer to the student, it has videos, examples, summaries". Similarly, T16 points to the "collective focus, all students are focused on the same discussion. In addition to being illustrated and visually appealing to the student".

It is important to highlight that in this category, difficulties and limitations in the use of DTs are also listed by teachers. For example, for T17 "the digital textbook cannot be very different from the printed one, that is, the concept-example-exercises structure cannot be lost, since the student is already used to this structure". This point conflicts with T5's comment, who justified that the DT was not used because it had the same content as the printed book. It is also questionable whether it is the teacher or the student who is used to the structure of printed teaching materials. Maybe teachers prefer that the DT has the same structure and equivalence as the printed book, but with the addition of expansions such as videos, simulations, and augmented realities, which are only possible with the inclusion of digital resources. These facts may indicate that the transition between printed and digital textbooks needs to occur in stages that include continuing *education* for their use and adaptation.

Another fact present in the answers of T16, T18, T30, and T31 is the importance of the DT being offline, since in the schools these teachers worked, in 2019, the internet network was not stable every day of the classes for the number of students. This reinforces the importance of investing in *infrastructure*.

In general, taking into account the teachers' answers, it is possible to affirm that the DT contributes to the students' motivation, the increase in class participation, and the possibility of diversifying teaching resources. There is also a need to invest in infrastructure and in continuing education that contributes to the use of DTs, but without quitting the traditional use of printed textbooks.

Conclusions

In this research, the objective was to investigate elements that limit the use of DTs by physics teachers and, at the same time, to identify the reasons that lead teachers to use DTs, in order to, in the intersection of the analysis of the answers, find ways to contribute for the insertion of DTs in the classroom.

In the analysis of the results, it was possible to identify the challenges that teachers face when using DTs. The main ones are: infrastructure, such as the lack of internet access; logic for teaching, which

does not provide for a number of classes compatible with the performance of differentiated activities; and pedagogical project, which is not organized relying on the use of ICT or the direction of its use. These are three of the five dimensions that, according to Kenski (2012), must be met so that teachers and schools can insert ICT into pedagogical practice. We can also highlight that there is a predominance of teachers who had contact with the study of ICT in undergraduate or graduate courses and who make use of DTs. This may be an indication that reinforces the importance of professional training for the use of ICT in the classroom.

In this way, we emphasize that making the DT available to teachers does not mean it will be used. It is necessary to structure a group of actions that favors its insertion in the classroom. In addition to the elements pointed out by Kenski (2012), for the use of ICT, we also understand the necessity of, in the specific case of the DT, adaptations and adjustments that go through the path of maintaining the well-known structure of the printed textbook and, also, present the diversification of language and approach with the inclusion of multimedia resources such as videos, simulators, podcasts, etc. This diversification appeared in the responses of teachers who pointed to DTs as a motivating resource and close to the reality of students who use the education system and that can corroborate the understanding that the school is one of the structures of society that must provide an inclusion, that gives young people who do not have access to technologies and those who were practically "born with a cell phone in their hands" the possibility of finding equal opportunities inside and outside school.

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11.

Textbooks in Rural Education: Analysis of Scientific Production in the Area of Physics Teaching

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ABSTRACT

This work presents the results of a bibliographic survey involving Brazilian scientific productions dealing with Physics Teaching, Rural Education, and Textbooks. The objective of this study was to present the theoretical perspectives of different authors, promoting reflection through content analysis in order to analyze how investigations have treated Physics Teaching and its articulations between the themes of Rural Education and Textbooks. Data were collected from the CAPES Journal Portal, using the keywords "Physics Teaching", "Rural Education", and "Textbooks", in the period of the last 10 years. The research was based on the description and analysis of a total of 9 peer-reviewed articles found in the search, using these three search terms. Then, the articles were categorized into two subgroups, based on indicators such as the keyword linked to the thematic line and whether the article was peer reviewed or not. Data were also obtained on the number of articles referring to each keyword individually, and from that, reflections were developed, articulating these perspectives and the analyzed themes, establishing hypotheses, and discussing the results obtained.

KEYWORDS: *Physics teaching; Rural education; Textbooks.*

Introduction

This work is related to school textbooks for Physics Teaching in the scope of Basic Education in Rural Schools. School textbooks are extremely important objects of knowledge for the teaching and learning processes in the classroom. Based on these objects, we intend to understand how teachers develop their methodological strategies for

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teaching and learning Physics in rural schools, considering the specificities of spaces and their subjects.

In this sense, it is necessary to understand how educational research has discussed the relationships established between school textbooks, Physics Teaching, and Rural Education. Considering that the fields of research in Education and Teaching are broad and diverse, it is necessary to delimit the observation of specific phenomena through also specific methodological approaches. Among these approaches, content analysis stands out as one of the most important, due to its general and formal characteristics.

According to Franco (2005, p. 7, author's translation), the starting point of content analysis, the message, can be "verbal (oral or written), gestural, silent, figurative, documentary or directly provoked". Based on this definition, how the areas of Physics Teaching, Textbooks, and Rural Education are related makes this methodological approach relevant, because the objective here was to understand how these themes are presented in academic research developed in recent years.

Theoretical Framework

Given these perspectives and making a parallel regarding the main theme, which is the analysis of these types of scientific productions, several authors describe the relevance of school textbooks for research in teaching. Therefore, an approach based on the work of this and other related areas is necessary. Regarding textbooks, we have the ideas of Choppin (2004) on how these manuals influence scientific productions and, concerning their role in society, the fact that textbooks produced an "extremely abundant critical literature" (p. 565, author's translation) is described. This abundant literature can be confirmed by the frequency with which a theme appears in the publications and, with that, we make another parallel, especially to the other themes that involve this analysis.

It is considering these perspectives that Rural Education was added to the present analysis, observed here as a topic that has been little addressed in the analyzed research. Through this observation, the motivations for the work emerged, seeking elements for an analysis considering the perspectives of the authors, the themes discussed, and

the number of works found. In this sense, relying on contributions to a better understanding of this theme, it is worth mentioning works such as that of Souza (2013), whose analysis deals with Rural Education in its relations between textbooks and the rural school context.

> The concept of field, according to the Curriculum Guidelines for Rural Education of Paraná, has its meaning referring to the identity and culture of rural people, valuing them as subjects, who have cultural bonds and values related to life on land (Paraná, 2006). Both rural and indigenous education is conceived as a public policy designed based on the appreciation of the formations of specific social groups that characterize the Brazilian population and therefore deserve to be valued and respected as a culture that influences and has historically influenced behaviors and customs that pervade the generations (Souza, 2013, p. 60, author's translation).

Souza (2019), in another work, approaches Rural Education from the perspective of ethnographic reports, focusing on subjects from rural schools. Thus, the objective of this work was to understand how the dimensions of Rural Education, Textbooks, and Physics Teaching are articulated based on the Brazilian scientific productions and the perspectives of the main authors that approach these themes.

Methodology

Two steps determined this analysis. The first was a data collection using the CAPES Journal Portal in order to carry out an exploratory survey of articles dealing with these three thematic lines, using the following keywords: "Physics Teaching", "Rural Education", and "Textbooks". The second step consisted of a description of the characteristics of the selected works, categorized through their themes and discussions.

The criteria assumed for data collection were whether the article contained one or more terms in agreement with the keywords in the body of the text and whether the article was peer-reviewed. The choice of works that use the term "textbook" was in the sense of covering the entirety of the term, thus dialoguing with authors such as Choppin (2004), who defines the textbook as an element of school

culture, having four main roles (Referential, Instrumental, Ideological and Cultural, and Documentary).

The data obtained were synthesized, delimiting the period from 2010 to 2021, that is, considering as a time frame the first appearance of physics textbooks in government programs, in 2009, in the National Textbook Program for High School (PNLEM).

In order to make an analysis based on the data collected, the articles were systematized in a table, being divided into two subgroups: the first, which shows the total number of articles reviewed by peers, and which belong to an individual category, that is, results of the search using only one keyword; and a second subgroup, showing the total number of articles that are not peer-reviewed, maintaining the same search criteria in both subgroups. For this categorization, the classification was based on indicators such as Textbooks and Physics Teaching, as well as their proximity to the themes of this analysis and their relationship with the main authors who deal with it. Another indicator was whether the proposal somehow approached Rural Education in its development, dialoguing with the idea of analyzing the works from this perspective. Articles dealing with at least two of the three areas analyzed in this research were also considered.

Regarding the content analysis methodology used, the work followed the concepts based on the main authors who deal with it, such as Bardin (2011, p. 44, author's translation), who explains that "the intention of content analysis is the inference of knowledge relating to the conditions of production (or, eventually, of reception), an inference that uses indicators (quantitative or not)".

In turn, for a better understanding of the indicators choice, especially how they are established with the themes, it is important to explain how the quantification and qualification of the data were represented. Bardin (2011) shows us how indicators manifest themselves in content analysis. In quantitative analysis, what serves as information is the frequency with which certain characteristics of the content appear.

In qualitative analysis, it is the presence or absence of a content characteristic or a set of characteristics in a given message fragment that is taken into account (Bardin, 2011). To systematize the data, this same approach was also used, given the number of results found in the CAPES Journal Portal.

Also in the theoretical field, we have contributions from Franco (2005, p. 29, author's translation), on the categories of analysis that,

in turn, influence the classification of indicators, in which "categorization is an operation of classification of constitutive elements of a set, by differentiation followed by a regrouping based on analogies, according to defined criteria". From these reflections, having defined the indicators, the data collected were organized according to the characteristics of these elements.

Results and Data Discussion

Consulting each of the keywords and the respective number of works, it was noticed that, in the period from 2011 to 2021, the term "Physics Teaching" presented a total of 3903 files, of which 1502 were peer-reviewed. For "Rural Education", there were 2531 files, 1606 being peer-reviewed, and for "textbooks", 4902 files were found, with 2160 peer-reviewed. Finally, using a combination of the three search terms, 9 articles from peer-reviewed journals were obtained.

A significantly larger number of works is found when using the combination of two terms, however, we chose to analyze the nine works that involved all three terms in order to dialogue with the proposal presented. Data referring to this topic are described in **Table 1**, representing the indicators and the total number of articles, divided into the categories of peer-reviewed and non-peer-reviewed.

Indicator	Peer-reviewed articles	Non-Peer-reviewed articles	Total
Physics Teaching	1502	2401	3903
Rural Education	1606	925	2531
Textbooks	2160	2742	4902
Physics Teaching, Rural Education, and Textbooks	9	0	9

Table 1. Works and their Indicators.
Source: The authors (2021).

In the second step of this investigation and from Table 1, the categorized works were analyzed by the proximity of the themes to which they refer, in addition to their main characteristics, according to the reading of the abstract of the articles.

Of the nine articles found in the CAPES Journal Portal, only five correspond to the proposal of this study. The other four were discarded, because, despite appearing in the search results, after a manual verification, it was found that they brought only one of the three themes and, in addition, this was related to areas different from those proposed in this analysis, that is, did not meet the search criteria. Once the articles were delimited, a more detailed analysis followed, classifying them into two subgroups, allowing their contextualization with Rural Education.

Thinking about this form of analysis, it is worth highlighting some points regarding the existing relationship between the themes of these articles studied. Rural Education comprises the rural school and all the relationships that involve it, understanding it as a school space with many specificities. In this research, this is the link between the themes of Physics Teaching and School Textbooks.

When we analyze, for example, the characteristics of a rural school from the perspective of Rural Education, we take into account several particularities that we do not find in other school spaces. The main one is the relationship between teaching practice and the reality of students' lives, especially in how it is present in the processes of appropriation of scientific knowledge. Thus, it is understood that it is possible to highlight some of these characteristics within the articles analyzed in this work, as they reflect research involving the three themes together.

Subgroup 1 – Physics Teaching and Training of Physics Teachers

In this area, three works stand out: the first, entitled "The Teaching of Physics in Rural Education: decolonizing, instrumentalizing, and participatory" (original in Portuguese, *O Ensino da Física na Educação do Campo: descolonizadora, instrumentalizadora e participativa*), by Barbosa (2018), which makes an epistemological discussion

about Physics, on the contributions to Rural Education. The work is divided into three stages: the first, with a critique of Physics; the second addresses its linguistic and reproductive character, carrying out the proposed discussion; and finally, a methodological approach applied to two classes of Degree in Rural Education – Natural Sciences, at the Federal University of Paraná (UFPR).

The second article in this area is "Rural Education and Physics Teaching: a mapping of theses and dissertations" (original in Portuguese, *Educação do Campo e Ensino de Física: um mapeamento de teses e dissertações*), by Fortunato and Lanfranco (2021), a survey of articles from the CAPES Journal Portal, where an approach is made seeking to understand how the initial training of physics teachers could cover Rural Education. The authors present a qualitative analysis of the data found, relating the two themes.

The third article, entitled "Simulated Jury and Brainstorming: Understanding the Implementation of the Belo Monte Hydroelectric Power Plant" (original in Portuguese, *Júri simulado e tempestade cerebral: entendendo a implantação da Usina Hidrelétrica de Belo Monte*), by Formigosa *et al.* (2017), deals with certain teaching strategies that aim to detach the teaching of Physics from methodologies centered on the use of textbooks, and memorization of formulas and laws. The authors discuss some ruptures of stereotypes regarding certain methodologies, observing the results through interviews with students participating in the teaching strategies used.

Subgroup 2 – Natural Sciences and Textbooks

The first work, entitled "Nature Sciences in Rural Education: encounters and disagreements in the struggle for Popular Education" (original in Portuguese, *Ciências da Natureza na Educação do Campo: encontros e desencontros na luta pela Educação Popular*), by Faleiro *et al.* (2017), is a thematic dossier of the *Revista Brasileira de Educação do Campo*. The works contained in the dossier address the Natural Sciences, which includes Physics, and how it is strengthening in its relations with Rural Education.

The second and last article analyzed, "From school to home, from home to school: the science textbook as a link between school dy-

namics and the local community" (original in Portuguese, *Da escola para a casa, da casa para a escola: o livro didático de ciências como elo entre a dinâmica escolar e a comunidade local*), by Souza and Garcia (2021), is about a study that investigates the relationship between school knowledge, local knowledge, and the textbook. The authors present the expressive presence of the textbook both in the school context and outside it, permeating the family and local context. The research relates the themes of Rural Education and Textbooks.

Conclusions

From the survey summarized in Table 1, together with the analysis of the five articles described, at first, it was noticed that, from the perspective of Physics Teaching, there are still few studies published in national journals on the relationships between physics textbooks and Rural Education. Although we found a total of nine works in the CAPES Journal Portal, from 2010 to 2021, only five of them deal with the themes and keywords indicated. Both discuss topics related, for example, to School Culture, Critical Epistemology, History of Science, and School Psychology, dealing with discussions that express the dimensions of teacher training and teaching practices. However, even though, individually, there is a rich theoretical basis for each of the themes, specific discussions that address two or even three areas at the same time are barely found.

A pertinent observation refers to the analyzed period and the chosen themes. The total number of works referring to the last 10 years shows us how publications in these areas are scarce. Although there is a greater number of articles dealing with some of the areas individually, in this analysis, the works that approach two or three of these areas were considered. This leads us to the construction of some hypotheses.

The works relating to textbooks (in some also mentioned as school manuals) usually deal with discussions that involve areas different from those considered in this research and, when approaching these relationships with other areas, they may not appear in the results, either because there is no compatibility between the keyword used and the body of the text or because they have different proposals.

Therefore, a more detailed qualitative analysis is necessary to locate a possible presence of these themes in the research, since some indicators may be present indirectly in the texts, thus being a possibility for future studies.

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12.
Content Analysis of the Speed and Velocity Concepts in Physics Textbooks

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ABSTRACT

Textbooks have a massive presence in Brazilian public schools. In several cases, they assume a "curriculum role" for certain subjects. Because of that, it is very important that the issues and concepts chosen to teach are connected with the daily lives of students. Thus, this work aims to investigate how some physical concepts are developed in physics textbooks and whether these approaches can establish a relationship with the student's world. Therefore, bibliographic research was carried out in several high school physics textbooks that presents different approaches about the average speed and velocity's concept. The Content Analysis technique was applied, providing the following categories: conceptual approach, mathematical approach and mixed approach. Based on this systematization, it was possible to verify that only one of the three books analyzed differentiates between speed and velocity (in Portuguese, the books define both as velocity). The accuracy of the definition of Physics concepts is of paramount importance for students to be able to connect the contents learned in the subject with the phenomena observed in everyday life.

KEYWORDS: *Textbooks; Secondary school; Velocity; Speed and PNLD.*

Introduction

The textbook is a pedagogical tool of great importance in the Brazilian context due to the National Program of Textbooks and Teaching Materials (PNLD), a program funded by the Federal Government to evaluate, acquire and distribute teaching materials to teachers and students of the Basic Education public schools. Thus, considering the situation of some educational institutions, the textbook has become

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the main strategy, sometimes the only one, to support the teaching of a content.

The PNLD, besides supplying the books, is responsible for evaluating and indicating them to the schools. Established by public notice, this requirement of a careful analysis of textbooks contributed to improve contents, seeking to eliminate conceptual errors and, as much as possible, bringing relevant topics from research in education and Physics teaching of these materials in the country (Langhi & Nardi, 2007). However, not all approaches in textbooks are evident enough to make the understanding easier for students and teachers. We can take as an example some recurrent approaches in physics textbooks that make it difficult to understand and relate it to the student's experiential world, contributing to Physics being seen as a subject hard to understand.

One of the concepts present in textbooks that contribute to this is "velocity". The terms "speed" and "velocity" (here also understood as "average speed") have different meanings in Physics teaching tradition, but are often used as equivalents in everyday life.

Given the above, this work aimed to perform an analysis of the concept of velocity in high school physics textbooks, because the previous misconception of these expressions can hinder the understanding of the concept of velocity in Physics and/or make it impossible for the student to make any relationship with his daily life.

First, it is necessary to differentiate speed and velocity. Speed is a scalar quantity defined as the distance traveled (the amount of meters moved) divided by the time interval (Δt):

speed = distance traveled cΔt

Thus, an object that moves with high speed moves a relatively large distance in a small time interval, while an object that moves with lower speed moves a smaller distance in the same time interval. And when the object is not moving, since the distance traveled is equal to zero, its speed is zero.

Average speed = total distance traveled Δt

Velocity is a vector quantity calculated by the rate of change of position, as known as displacement (Δs), of an object during the time

interval. The displacement is also a vector quantity that can be calculated by the difference between the final and initial positions occupied by the object. Speed, in addition to indicating how fast an object moves, also determines the direction and sense of that object's motion.

Mathematically, velocity is obtained by the following relation:

velocity = $\Delta s \Delta t = s\text{-}s0t\text{-}t0$

The necessary differentiation between speed and velocity can prevent the student from developing a wrong concept and/or not establishing any relationship with the phenomena that involve this physical quantity in their daily lives because they are not clear that one term refers to a scalar quantity while the other refers to a vector quantity. Thus, it is of utmost importance to conceptualize scalar and vector magnitudes and, in this particular case, to differentiate between distance and displacement, between speed and velocity.

In Brazil, it is important that physics textbooks have a rigorous conceptual accuracy of the topics covered, since some of the teachers who teach Physics do not have a background in the field, which can lead to a superficial understanding of specific concepts, focusing solely on the mathematical aspect of the discipline. This approach can harm students' perception of Physics, which is considered an experimental science with great application in our daily lives.

Methodology

Bardin's (2011) Content Analysis, a method for analyzing data in qualitative research, and a comparative bibliographic study of recent physics textbooks were used in this research.

According to the PNLD notice, the evaluation of the textbook is performed by a team of professors and teachers from the public and private educational institutions and aims to analyze the quality of the textbooks that will be purchased and distributed by the state. Despite all this care and the fact that textbooks had improvements, there are still approaches in them that can lead to conceptual errors or ambiguous conceptions. Therefore, it is important to indicate the weaknesses

of the books, so the PNLD process can keep improving the textbooks quality.

The physics textbooks chosen for analysis were based on the following criteria: 1) books approved in the PNLD; 2) books known to be used by teachers as a reference source for the content to prepare their classes; and 3) books that dealt with the concept of velocity. Because of the established parameters, the books analyzed are usually used in the 1st grade of high school. One of the selected books is not part of the PNLD, however, it is a book that presents a precise approach to the concept of velocity and is known by physics teachers.

Table 1 shows the high school physics textbooks analyzed in this research.

Code	Book	Author(s)	Publisher	Publication Year
L1	Física conceitual	Paul G. Hewitt	Bookman	2015
L2	Física	Ricardo Helou Doca Gualter José Biscuola Newton Villas Boas	Saraiva	2016
L3	Física	Kazuhito Yamamoto Luiz Felipe Fuke	Saraiva	2016

Table 1. Textbooks analyzed in the study.

After the definition, the analysis procedures consisted in the selection of the chapters related to the speed/velocity content, checking only the theoretical approach. For this, a thorough reading of the texts was performed, looking for differentiations that could lead students to build their concepts about the content. To identify these differences, the approaches were classified into the following groups:

    i) Conceptual approach: concerns the conceptual development of the content, seeking connections with the student's reality. The understanding of physical knowledge is based on the discussion of phenomena relating them to the concepts of the subject.

    ii) Mathematical approach: refers to a development of the contents that emphasizes the use of laws, theories and principles expressed in mathematical language to understand Physics. This approach usually focuses on memorizing equations and

formulas to solve exercises. Thus, mathematics is seen as structuring physical knowledge.

iii) Mixed approach: corresponds to the development of concepts that uses the two previous approaches, bringing a conceptual conception about the phenomena and presenting their mathematical equations.

In addition to the analysis of the approaches, during the reading of the chapter it was also observed how the concepts of distance and displacement are worked and if they are used in the construction of the concept of velocity.

Results and Data Discussion

High school physics textbooks presented different ways of explaining the concept of velocity.

Book L1 is a translation of an American textbook and its pedagogical approach is predominantly conceptual, contrasting with most physics textbooks for this level of education, which favors a mathematical approach. (Schneiders, Melo & Gastaldo, 2016) The concept of velocity is worked on in the chapter that deals with rectilinear motion.

The author initially develops the concept of speed, defining it as the ratio between distance traveled and the respective time interval, and brings a numerical example to illustrate the concept. He also discusses the units used to measure this quantity, explaining the most appropriate for the different distances traveled. It then discusses the concept of instantaneous speed, followed by the introduction of the concept of average speed. In this topic, it is pointed out that to find out the time that will be spent on a given route, one seeks to know the average speed, which is defined as the ratio of the total distance traveled for a time interval. Numerical examples are also used to clarify the concept. Finally, it is pointed out that the values of average speed are, in most cases, different from the values of instantaneous speed for the same route and that the distance traveled can be obtained by the product of the average speed by the time interval spent.

Soon after, the concept of speed is introduced, defined as how fast and in what direction and direction an object is moving. The text

thus assumes that velocity is a vector quantity, since it has modulus (intensity), direction, and sense. The difference between velocity and speed is emphasized: while the former indicates how fast the orientation of a moving object is, the latter indicates only how fast an object is moving, so that speed is characterized as a scalar quantity. To finish the topic, the concepts of constant velocity and variable velocity are defined in order to introduce the concept of acceleration. The book L1, by devoting a greater number of pages to this topic, allows for a more conceptual approach rather than a mathematical one.

Book L2 is a Brazilian book, approved in PNLD. Its approach is mixed, bringing the contextualization of physical concepts and mathematical development. The concept of velocity is dealt with in the chapter entitled Introduction to Scalar Kinematics and Uniform Motion.

First the concept of average speed is introduced as a way to conceptualize average speed in everyday life. Average speed is defined as the ratio between the distance traveled and the respective time interval. It is emphasized that these quantities cannot be negative, and a numerical example is presented to illustrate the concept. Soon after is introduced the concept of space, defined as the position occupied by a particle in relation to its trajectory, conceptualized as the line that describes its movement in relation to a referential. In this context, the book differentiates between displacement and distance traveled. The text draws attention to the fact that the displacement can be negative while the distance traveled cannot take on a negative value. Subsequently, the average speed is defined, obtained by dividing the displacement by the respective time interval. This situation is exemplified numerically and a comment is made about the unit of measurement of speed in the International System of Units (SI). Finally, the topic of instantaneous scalar velocity, which is the value that the velocity assumes when the time interval tends to zero, is discussed. In this book, the concept of scalar and vector magnitudes is discussed in another chapter, so that the differentiation between speed and velocity is due to the fact that the magnitudes may or may not take on negative values, but not because they are scalar and vector, respectively. Due to having a reduced number of pages dedicated to addressing this issue, the book L2 does so in a way that the conceptual aspect is treated briefly, complemented by a mathematical approach.

Book L3 is also a Brazilian work approved in PNLD. Its approach is predominantly mathematical, eventually bringing a contextualization of the content worked. The concept of velocity is addressed in the chapter called Mechanics, Basic Concepts of Kinematics and Uniform Motion.

In this book there is no differentiation between speed and velocity and only a brief comment is made about the difference between displacement – defined as the difference between the initial and final position occupied by the object – and distance traveled – defined as the algebraic sum of the absolute values of partial displacements. It is emphasized that displacement can take on negative values, but distance cannot.

The average velocity, in this book called average scalar velocity, is defined as the ratio between the displacement made by a mobile and the time to make it. Next the concept of instantaneous velocity is discussed, understood as the average velocity taken in a very small time interval, almost zero, that is, the value of the velocity at a given instant. Finally, the author introduces the unit of average velocity in the International System of Units and indicates how to convert it to other units.

Conclusions

The development of this research made it possible to verify different approaches to the concept of velocity present in physics textbooks. This concept is present in the students' everyday life; however, the way this knowledge is built in physics textbooks can make it difficult for students to relate it to their experiential world.

The results obtained showed that this subject was approached in two ways: conceptual, mathematical and mixed.

It was found that the order of the contents of the Brazilian books makes it difficult for the student to understand the difference between scalar and vector magnitudes, because the concept of vector magnitudes is addressed after the discussion between speed and velocity. However, book L2 tries to distinguish these quantities by working in detail on the concept of distance traveled and pointing out that the displacement can take on negative values, thus marking the differ-

ence between these concepts and resuming it to build the concept of speed.

It was observed that the three analyzed books make use of contextualization to work the concept of velocity, but at different levels. Only book L1 makes an in-depth discussion to develop this topic, making clear the difference between velocity and speed without making excessive use of mathematical equations.

It was also observed that publishers may use different approaches to increase acceptance of their products in the educational market. The selected textbooks were chosen due to their different approaches, which is a crucial point for the research. It was noticed that Brazilian textbooks have a concise and topic-divided approach to the subjects, while the foreign textbook provides a more in-depth discussion of the topic. One possible explanation is that national textbooks have a limitation on the number of pages and several prerequisites to be selected in PNLD, which may result in a superficial discussion of some concepts.

This research also pointed out the potential for further investigations aimed at identifying other concepts that, like speed and velocity, may induce students to misinterpret or mislead. Since the textbook is a widely used educational tool in the classroom, the less it presents erroneous or ambiguous situations, the greater its contribution to students' education.

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13.
The Physics Textbook as an Actant: A Possibility of Study According to the Actor-Network Theory

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ABSTRACT

The physics textbook used in Brazilian public schools is significant to students and teachers. Its content, production, appearance, methodological approach, and representation in the publishing market are important to school culture. It is a reliable source for presenting school knowledge and often the primary or the only support for teachers. However, the reflection on how it contributes to social relations in teaching and learning could be improved. Based on that, the research aims to demonstrate that the physics textbook is an actant in public schools, using the Actor-Network Theory (ANT) approach. ANT is an analytical approach to finding the associations and movements of actors involved in a social process. The research analyzes theses from Brazilian universities that identify the role of physics textbooks chosen by the National Program of Textbooks and Learning Materials (PNLD). The analysis aims to identify how the textbook functions in Brazilian public schools, and to find connections to its curriculum development, public policies, teaching practice, and the students' learning. The results show that textbooks are more than just a means of accessing knowledge. They mobilize actions, such as students studying and teachers teaching, and are instrumental in facilitating learning during times of crisis. The Actor-Network Theory offers a promising new perspective on research on textbooks, enabling us to understand how textbooks stimulate actions and function as actors in the public educational context in Brazil.

KEYWORDS: *Physics textbook; Actor-Network Theory; ANT.*

Introduction

The physics textbook is a fundamental component in the teaching and learning process of Brazilian Basic Education. It is a primary

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teaching resource used by education professionals and relevant for schools in terms of content, production, methodological approach and representation in the publishing market (Martins & Garcia, 2017). It is also a reliable source of content and conceptions predetermined by official documents, which makes it a protagonist of the National Textbook and Teaching Material Program (PNLD), one of the largest public policies in Brazilian education. The PNLD evaluates, selects, and distributes, free of charge, approved collections to teachers and students in public schools, offering teachers multifunctionality in methods and providing students access to a wide range of knowledge.

However, sometimes the importance of the textbook is minimized, being treated as a mere adjunct in the educational process. In this sense, it is necessary to reflect on its role in the construction of social relationships in the context of teaching and learning in Basic Education. This paper aims to demonstrate that the physics textbook is not a mere supporting actor in the educational process. It is an artifact that is available to be consciously and critically incorporated by teachers and students to improve the teaching and learning process.

Using the Actor-Network Theory (ANT) as an analytical approach, we assign the textbook the role of actant, a term that includes humans and non-humans in the definition (Latour, 2001). According to this theory, knowledge is a social product (Law, 1992) formed by networks of heterogeneous materials involving actants, human and non-human, who behave as actants and act mutually, interfering and influencing each other's behavior, and the production of knowledge takes place through associations that give visibility to non-humans, as is the case of the textbook (Latour, 2012).

In Actor-Network Theory, actors are defined based on their role, level of activity, impact, and effect on the network. This means that people, objects, things, and institutions can all be actants. When we consider how non-humans, such as textbooks, contribute to school culture and assist in the teaching and learning process in elementary school, we realize the existence of hybrids that cannot be separated from the educational environment. Education, as a product and producer of human culture, is part of this association between humans and non-humans, and there is no opposition between culture and technique, only complementarity (Oliveira & Porto, 2016).

Thus, Basic Education has an intrinsic relationship with technical objects, which means that education is a socio-technical network formed by the association between humans and non-humans. Access to education can form actants capable of maintaining or transforming various networks. ANT describes how different entities come together to form associations, exerting forces and persisting or declining over time.

Reflecting on the actions of the educational process in which the textbook is present makes it possible to verify its interactions and interferences with human and non-human actors. This reveals that the objects have life and action within the social context in which they participate, and that we would not have the existence of a society if it were not for the indispensable formation of heterogeneous networks of actors that configure the social.

Methods

This research is qualitative and documental, and analyzed the theses defended in Brazilian universities that identified the role of physics textbooks chosen by the National Program of Textbooks and Didactic Material (PNLD) in the educational context of Brazilian public schools. The analysis aims to identify the elements that configure textbooks as actors and find the connections that allow following their tracks in the socio-technical networks in which they participate. The study also identifies the possible paths that textbooks take, both in curriculum development, in the creation of public policies, in teaching practice, and in the hands of students. Objects not only perform practical tasks, but also help stabilize, mediate, shape, articulate, perform, give meaning to action, and even form identities (Coutinho & Viana, 2019).

Thus, using Actor-Network Theory not with the focus of explaining why things are the way they are, but in showing how the associations and movements of the actants can explain the social context, that is, how the textbook is realized in the actions of humans, forming an "intriguing fusion of human activities and non-human entities" that is realized in the process of knowledge production (Latour, 2012).

Results

The research is in its initial phase, still in the selection and analysis of theses, but as previous results, it has already found that physics textbooks are not only tools for accessing knowledge, but also significantly influence actions such as motivating students to study and teachers to teach, especially during the pandemic, when media connections were not efficient.

Furthermore, the research showed that textbooks remain an important part of school culture, even with the availability of new educational technologies in Basic Education. Textbooks are considered a reliable source that strengthens scientific knowledge and serves as a mouthpiece for science. This can be attributed to the existence of the PNLD, a public policy that universally evaluates and distributes textbooks to support pedagogical practices.

The PNLD has also allowed, in its actions, access to textbooks for all Brazilian students in the public school system, being the world's largest distribution program of this didactic resource and maintained by the Federal Government, which is responsible for the resources and execution of actions in the educational field, aiming to promote quality education throughout the country.

These facts already show that textbooks behave as actors, as they act and move in the educational context, interacting in various socio technical networks and interfering in the social.

Discussions

The study of social relations through Actor-Network Theory (ANT) involves exploring the actions of human and non-human actors in sociotechnical networks. By applying ANT to analyze the roles of textbooks, we can gain new insights into their influence as actors present in these networks. Studies have shown how physics textbooks affect public education, establishing articulations between it and the various interests involved (political, economic, pedagogical…) and their consequences (Díaz, 2011; Aguiar & Garcia, 2017), evidencing the interaction with other actors and modifying behaviors.

Through a symmetric ontology that considers the agency of human and non-human actors, ANT offers a promising approach to understanding the ways textbooks function as actors participating in sociotechnical networks and influencing, stimulating actions and shaping the public educational context in Brazil. Overall, the research showed that the impact of textbooks on public education is significant, and their role as actors in the educational context should not be neglected.

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14.
The Physics Textbook as an Emancipatory Instrument: Analysis of Its Potential

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ABSTRACT

Understanding the concept of emancipation and its relationship with the teaching of Physics and how this concept is or may be present in the textbook makes it possible to recognize in education new possibilities for this discipline, culturally considered as technical and mechanical. Through a documentary research carried out in productions of the area and by the analysis of three textbooks approved in National Programme of Books and Teaching Materials (PNLD 2021), already meeting the criteria, skills and abilities, established in the Curricular Common National Base (BNCC), the present investigation sought to verify how the categories man, knowledge and society are presented and discussed in these textbooks of Physics, and how they dialogue with indicatives regarding emancipation. The results have shown that even though it is an initial research, the textbook can play an important role and contribute to the construction of the emancipation of students and teachers, considering all the representations that involve it, from the language used, the facts mentioned, the contents and the way they are approached, process that is strengthened and materialized in the context of teaching and learning among students and teachers.

KEYWORDS: *Education; Emancipation; Physics textbook.*

Introduction

The concept of emancipation has been historically and socially constructed over time. The word emancipation derives from the Latin *emancipe*, and is related to the process of individual formation through which, by means of knowledge, one should act in society collectively. It also represents the historical, ideological, educational and formative process of constituting elements for individuals, social

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groups, communities and countries to overcome political, economic, cultural or ideological tutelage (Melo Neto, 2014, p. 64). In Roman law, the concept was linked to that of *pater familias* and the authorization to free a son from paternal power. Etymologically, emancipated is someone who is not imprisoned by the hand of another (Bido, 2012, p. 16). In the Middle Ages it was taken as a natural attribute when adulthood reaching majority age. During this period the concept of emancipation also became political, bringing the meaning of liberation (da Silva, 2011, p. 40).

During the transition from the Middle Ages to the Modern Age, in the context of what was called the Enlightenment (17th-18th century), the concept of emancipation took on a prominent role, highlighting its relationship with reason and knowledge. Reason contributed to the development of the arts, laws, morals and sciences, and it was assumed that through knowledge it would be possible to emancipate human, freeing them from the domination of other humans (Beltrame & Azevêdo, 2017, p. 75). In the Enlightenment sciences played a prominent role, with scientific knowledge being influenced by thinkers such as Isaac Newton, for example. With the advancement of science and technology, knowledge gained a technical sense focused on objectivity, calculation, understanding and discussions about emancipation intensified.

With the Industrial Revolution, capitalism began to influence the way society works. Amid this configuration, the emancipation preached by the Enlightenment did not materialize; instead, knowledge and work became dominant elements in people's emancipation. What we saw was that the emancipation preached in the Enlightenment, in the context of capitalism, favored the alienation of humans in their way of living and surviving.

Marx, interpreting the capitalist mode of production, defined work as the fundamental category of a society's functioning, being both the source of human being's fulfilment and of his liberation and political emancipation. However, Marx preserved from the Enlightenment the idea of self-emancipation, conceiving emancipation as a process of self-determination, in which work is the source of human being's fulfilment, production, and recreation of themselves (da Silva, 2011, p. 44).

From the perspective of world history, capitalism was the first mode of production that institutionalized self-regulated economic growth. In it, an economic mechanism is installed that ensures the

propagation of subsystems of rational action with respect to ends. This new form of social organization brings with it the pursuit of progress supported by modernization and scientific advancement. According to Habermas, the productive forces, the engine of social development, did not contribute to the construction of emancipatory movements, on the contrary, technical-scientific progress demonstrated its function of legitimizing domination (Habermas, 1975, p. 322).

In the context of the Frankfurt School, Critical Theory, a movement that emerged at the early 20th century, the concept of emancipation assumed a prominent role in discussions. Supported by a proposal for social discussion about the advancement of capitalism, technologies, science and the consequent domination of the human world, society and human being as an individual, thinkers such as Adorno, Horkheimer and Habermas, among others, developed the idea of emancipation as a possible construction in the society we live in. For them, it was necessary that rationality was not taken only as an instrumental reason, but as a dialogical and social conception, realized from the interaction between subjects, through the communication process (Brito, 2013, p. 34).

In this sense, for Habermas, education can become an element of emancipation as long as the critical use of reason brings culture's ideals closer as a way to understand the present to build the future, distancing oneself from reality to reflect on it. The reflective process that Habermas proposes occurs through Communicative Action, aiming to overcome the immediacy of knowledge, bringing the perspective that education can contribute to reflective rationality, leading to the construction of emancipation through school and knowledge (Brito, 2013, p. 37). By providing access to knowledge, education contributes significantly to people's emancipation.

Based on the study of how the concept of "emancipation" has evolved over time in society, this research aimed to see how the relationship between education and emancipation takes place and how Physics textbooks can contribute to the emancipation of teachers and students.

Methods

The research, of a qualitative nature, was developed in two stages: identification and quantification of academic production related to

the theme of the contribution of textbooks to the emancipation of students and teachers, and verification of how the physics textbook can also contribute to this emancipation.

The first stage of the research consisted of a documentary analysis of the academic production on the theme available in the Capes Theses and Dissertations Database. Covering the period from 2010 to 2020, theses and dissertations were identified whose themes encompassed the categories education, emancipation and textbooks. In these documents, it was analyzed how these categories were interrelated, mainly seeking to identify the role of the textbook as a participant in the process.

In the second stage, the Kinematics concepts presented in the Natural Sciences textbook collections approved for work in schools in 2022 and most chosen by teachers were analyzed. In the analyzed textbooks, the way of presenting the contents and how they articulated with the studied references on emancipation and with the respective competencies established by the BNCC were identified.

After this initial analysis of the textbooks, an instrument developed based on the work of Rodrigues and Garcia (2023) was applied to them, aiming to verify how textbooks could contribute to the emancipation of their readers.

The questions contained in the instrument were designed to identify indicators of the presence of three categories that emerged from theoretical studies: Knowledge; Human being; and Society. Always affirmative, the questions would indicate, according to the adopted theoretical framework, the degree of contribution to the emancipation of readers. **Table 1** shows part of the instrument developed for this purpose.

Issues to analyze	Valuation				Observations
	N (never)	S (some-times)	A (almost always)	E (ever)	
1. Knowledge is presented as a human, historical-social construction.					

2. The human being is presented as a historical and social being, a participant in the construction of knowledge and society.					
3. The Society is described as a multicultural space.					

Table 1. Textbook analysis instrument.

The textbooks collections analyzed were:
1. *Modern Plus: Natural Sciences and Their Technologies*, by José M. Amabis *et al*. 1st ed. São Paulo: Moderna, 2020 (PNLD 2021).
2. *Being a Protagonist: Natural Sciences and Their Technologies: Evolution, Time and Space: High School*, by Ana Fukui *et al*. 1st ed. São Paulo: Edições SM, 2020 (PNLD 2021).
3. *Connections: Natural Sciences and Their Technologies*, by Miguel Thompson *et al*. 1st ed. São Paulo: Moderna, 2020 (PNLD 2021).

For PNLD 2021, there was a change in the organization of the distributed textbooks, which are now organized by Knowledge Areas instead of subjects. Thus, for example, a collection of three physics textbooks, one for each high school grade, no longer exists, and a Natural Sciences collection was organized with six textbooks containing Physics, Chemistry and Biology content. The series was also no longer observed, with only one of the textbooks to be used for each academic semester, in order to address the contents of these three disciplines in an interdisciplinary manner.

Results and Discussion

In the collections, the structure was analyzed and specifically the chapter in which introductory questions of Kinematics were presented. The analysis of the textbooks that contained the chosen subject aimed to verify how the conceptions of knowledge, human beings

and society were presented, and the intensity with which they were manifested in the text, which allowed an evaluation of the textbook's contribution to the emancipation of readers.

Collection 1 Analysis – *Modern Plus*

In its introductory part, the authors justify and contextualize the contents and their relation with the BNCC proposal. The textbook presents contents and also a manual for the teacher.

It was possible to verify that the presentation of the content contemplates competencies related to important elements of emancipation, as follows:

– Competency 1: appreciation of historically constructed knowledge.
– Competency 3: appreciation and participation in different artistic and cultural manifestations.
– Competency 6: valuing the diversity of knowledge and cultural experiences.

The textbook presents in its introductory part, in the "Get to know the book" section, a brief description of the chapters with their topics, illustrations and characteristics, as well as observations regarding the BNCC, activities and complementary resources. In the text, references are made to the category of human being, considering him as a social being, who develops collective work, suggesting an active posture in his social participation.

Issues to analyze	Valuation				Observations
	N (never)	S (some-times)	A (almost always)	E (ever)	
1. Knowledge is presented as a human, historical-social construction.		X			In some sections, the textbook presents the historical contextualization of the content and the thinkers involved in the construction of this knowledge, such as Galileo Galilei, for example.

	N (never)	S (sometimes)	A (almost always)	E (ever)	Observations
2. The human being is presented as a historical and social being, a participant in the construction of knowledge and society.		X			The textbook presents human being as a subject who acts in society and uses knowledge to solve problems and make his life easier.
3. The Society is described as a multicultural space.	X				

Table 2. Collection 1 Analysis – Energy and Motion Chapter.

Collection 2 Analysis – *Being a Protagonist*

The textbook, in its introduction, presents a theme of great relevance regarding the interpretation and criticality of scientific facts, through a section entitled "Identifying fake news on scientific topics".

Unlike the book in collection 1, the textbook in collection 2 goes directly to the content, without an introductory contextualization that justifies the BNCC's competencies. It lacks any reference to important elements for emancipation, such as human being and society. What we see are examples of practical application of the content.

Issues to analyze	Valuation				Observations
	N (never)	S (some- times)	A (almost always)	E (ever)	
1. Knowledge is presented as a human, historical-social construction.		X			The text mentions the relationship between work, leisure and daily activities with movement. It cites examples of applied content, such as the use of the tachograph.

2. The human being is presented as a historical and social being, a participant in the construction of knowledge and society.	X				
3. The Society is described as a multicultural space.	X				

Table 3. Collection 2 Analysis – Scalar Kinematics Chapter.

Collection 3 Analysis – *Connections*

Similar to the textbook in collection 1, the textbook in collection 3 presents an introductory contextualization of the theoretical and methodological approaches aligned with the BNCC. However, in the development of the chapter it does not refer to elements related to emancipation.

Issues to analyze	Valuation				Observations
	N (never)	S (some-times)	A (almost always)	E (ever)	
1. Knowledge is presented as a human, historical-social construction.		X			The chapter begins by referring to the Brazilian traffic code, relating practical situations of traveling and cars.
2. The human being is presented as a historical and social being, a participant in the construction of knowledge and society.	X				

3. The Society is described as a multicultural space.	×				

Table 4. Collection 2 Analysis – Introduction to the study of Movements Chapter.

Synthesis

As presented, it was verified as an application of the concepts of knowledge and of human beings as a subject in society that do not deviate from what has been proposed in recent decades.

Regarding content, the analyzed textbooks give more emphasis to the content, applications, examples and activities, not making deeper discussions related to society, culture, youth protagonism (despite being highlighted in the BNCC's competencies), and emancipation, representing a proposal divergent from that presented in the introductory part.

The analysis showed that the subjects are presented with a focus on content rather than their meaning in context. It was also observed that the authors approach knowledge in a relatively technical way, eventually establishing connections with society. In the textbooks, human being is seen as a subject who applies this knowledge, but there are no social-historical discussions about the construction of this knowledge.

The chapters of the PNLD 2021 textbooks analyzed presented an introductory discussion about the competencies and skills that will be contemplated, bringing the objectives and justification for the presented contents. However, in the development of the content they do not effectively present elements related to emancipation.

In general, the investigation allowed us to verify, at least regarding the subjects analyzed, that the physics textbook can play an important role in the process of emancipation of students. However, the organization of elements that can contribute to emancipatory thinking has not been systematically explored in these contents.

Despite little exploration of the emancipatory potential of textbooks, we could infer, especially in terms of Physics content, culturally considered mechanical and technical, that the organization and presentation of these contents can contribute to envision new horizons, as when we identify problems and possibilities, we know the scenario and can contribute to the search for improvements in an education that can indeed be emancipatory.

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15.
A Physics' Textbook in Germany from the Beginning of Twentieth Century

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ABSTRACT

During the French Revolution, German people became aware of the State control over cultural formation and the uncritical development of the individual's vision and performance in society, which triggered the search for cultural renewal and demanded a reformist policy in the face of the need to rescue the ideological identity of German people at the end of the 19th century. In this context, the present work seeks to understand the purposes of producing a physics textbook, aiming to understand the selection and organization criteria and pedagogical perspectives adopted in the material based on the sociocultural conjuncture of that time. Content Analysis method was applied to analyze the textbook, allowing us to understand how neo-humanist thinking has permeated German education since the 19th century, demanding the production of adequate teaching materials to meet the needs of the movement for reformation and expansion of the educational system, aiming to rescue a cultural identity more focused on the individual.

KEYWORDS: *Textbook; German education; Physics teaching.*

Introduction

Under the impetus of the French Revolution which had an impact on the whole Europe in the 18th century, German people became aware of the State control over cultural formation and the uncritical development that permeates the vision and action of the individual in society. According to Britto (2012), this movement encouraged broad cultural renewal and the perception of an education that limits hu-

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man capacity, oppressing and imposing a predetermined culture on individuals, according to the interests of the ruling groups.

Writers and statesmen such as Johann Wolfgang von Goethe and Robert Musil exerted great influence on the social context of this period with the publication of their works in which they criticize the German education system prevailing in the 18th and 19th centuries. According to Alves (2019), the cultivated individual constitutes a synthesis of all humanity, therefore, without the cultivation of oneself, there is no individualization. However, for this self-cultivation, the State should limit its action, promoting freedom for individual development, and point to the need to move away from the French educational reform model, adopting the internal dynamics of the country as core of the renewal movement.

Wilhelm von Humboldt was the first to perceive and publish a critique of the vertical domination over the student observed in the German school system, which shaped the subject as a subject or state employee, assuming the imposed needs as the center of their training (Britto, 2012). In view of this, according to Alves (2019), he proposed an education that aimed at developing the concept or image of humanity within itself. Humboldt highlights the return to the interiority of the human being as a form of liberation, stating that culture must "start from man, from what is most intimate in him, further away from the corruptibility of the schemes of domination" (Britto, 2012, p. 222), opposing the concept of *Kultur* – the idea of Culture as "civilization", of the "cultured" being as the "civilized" one – with the concept of *Bildung* – which can be understood as a process of self-development and self-training, in an active perspective of the individual in his education. That is to say, it is human nature that directs the power of the State according to its requirements for the cultural constitution of the individual.

According to Alves (2019), the concept of Bildung was an educational response in search of citizenship in an emerging civil society marked by fragmentation.

> *Bildung* is integration through education and culture. This function is associated with the normative notion of humanity and the idea of an integral individual as a unifying and totalizing instance. […] Thus, training, educating oneself means reconnecting with the image of humanity within oneself (Alves, 2019, p. 7).

When Friedrich Wilhelm III took over as emperor (in the 19th century), he presented a reformist policy that favored the renewal of the institutions directing the constitution of German Culture, among them the schools, in view of the need to rescue the ideological identity of the German people. This policy made it possible for Humboldt to write the administrative guidelines that guided the founding of the University of Berlin based on autonomy.

Influenced by the work of Heinrich Pestalozzi, this reform of educational systems aimed at the lower classes and social demands, and reached the education of the youngest (Britto, 2012). However, this model of education still had in its essence the need to develop the social and professional function, conditioning the individual to meet the demands of society. By demanding an understanding of the dynamics of the learning process and its impacts on all phases of human life, Pestalozzi's project prepared the context for the implementation of a Modern Pedagogy (Humboldtian Pedagogy). The preparatory course for university admission was created – then called *Gymnasium* –, emerging at the same time as the French *Lyceés*.

According to Britto (2012), paradoxically, this course ended up serving an economic elite that, despite following the precept of *Bildung* – of training as a continuous and justified process in itself –, followed specific national molds, marking the State's commitment to the education of the German people. But, according to Alves (2019), the reformers gave up maintaining State dominance, causing this precept to be converted into an instrument of distinction between social groups. Even so, the *Bildung* concept became an ideal of German culture even in the imagination of the lower classes.

> With classical studies as its center, the *Gymnasium* was above traditional schools and was the only secondary education institution able to apply the *Abitur*, an exam that gave access to German universities. Alongside the *Gymnasium*, the *Realschulen* (royal schools) were created, preparing students for technical and bureaucratic functions in commerce and industry. […] *Realschulen* graduates were barred from access to universities and civil service, reserved for *Bildungsbürgertum* graduates of the prestigious *Gymnasien* (Alves, 2019, p. 11).

As a consequence, by generating a vast expansion and reform of education in the German Empire of the 19th century, the neo-humanist approach gained space in a movement searching for the recovery of

the German cultural identity after a period of oppression and domination of the State in relation to the cultural formation of the population.

In this context, in this paper we sought to understand the purposes that led to the production of a textbook on Physics at the end of the 19th century, to identify the criteria for selection and organization of topics as well as the pedagogical perspectives adopted in the material and eventually interpret the reason for choosing this approach based on the sociocultural context of the time.

Textbooks as Complex Objects

In the course of History, it is possible to observe changes in the perception of scientific education, resulting from the transformations in culture, from political and economic development, from power struggles and from the experiences of those involved in the education process. As an element of school culture, the textbook assumes multiple functions, transmitting values, ideologies and cultures that go beyond the technical-scientific content, which undergoes changes over time. Batista (1999, p. 564) defines the textbook as "a book or printed matter used by the school for the development of a teaching or training process". For Choppin (2000), the textbook appears as a pedagogical tool whose initial function is to facilitate learning, being also a hegemonic element in Western society, since we all use textbooks at some point of life.

Society is dynamic, whose conceptions and cultural values change in different historical periods. In view of this, the textbook acts as a repository of knowledge deemed appropriate for the maintenance of the values of a society (Choppin, 2000). In this process, the educational programs constitute an organized structure of conformation, and the contemplated knowledge topics result from a cultural selection resulting from a cultural heritage, as well as of didactic imperatives. The selection of topics has its origin in the representations of society in the face of attitudes, knowledge and values considered important, resulting from the delimitation given by the criteria defined by the authorities (formal curriculum, generated from the selection in the accumulated culture), and in the delimitation and approach given by the teacher and the experiences outside the educational environment.

Forquin (1992) considers that school culture shapes habit and influences cultural practices and society's thinking, in order to make sense of Choppin's (2000; 2004) interpretation that the textbook acts in this context as a complex object due to its multiple functions, establishing relationships with the world and culture. Far from being considered a banal object, the complexity of the textbook stems from the multiplicity of its functions. According to Choppin (2004), the historical study shows that textbooks perform four essential functions: a referential function, in which the textbook assumes the role of supporting educational content, as a depository of the knowledge that society deems necessary for new generations; instrumental function, in which it presents itself as an instrument/resource for implementing learning methods with the proposal of exercises and/or activities; ideological and cultural function, for being the textbook bearer and transmitter of the language, culture and values of the hegemonic classes, directing the construction of identity, acculturation, as indoctrination of the new generations, assuming a political role; and a documentary function, in which it acts as a source of materials for observation, reflection and confrontation for the development of a critical spirit.

According to Rockwell (2001), the different forms of appropriation of the textbook establish distinct types of relationship between agents and text. In the same way that the teacher's and student's relationship with the text allows a crossing of interpretations of school conventions and everyday knowledge, reflecting beliefs and habits of these agents, locally and historically contextualized, and carrying protocols of reading and using intrinsic to the text. This web of mutual relationships unleashes an influence between the textbook, its agents, the environment, and the conjuncture in which everyone is inserted, transforming these entities reciprocally.

Methodology

Content Analysis method was performed to analyze the textbook *Lehrbuch der Physik zum Schulgebrauche[1]* by the author Wilhelm Winter, published in 1905. Bardin (1977) divides the analysis process into three steps: (i) pre-analysis, (ii) material exploration and

(iii) data processing, inferences, and interpretation. The pre-analysis is characterized by the selection and preparation of the material, with the selection of samples and coding for identification. In the second step, the relevant fragments of the samples are selected, and the registration and context units are created. In the third step, the data is organized into categories. Categorization should allow all units to be classified, based on a single criterion and allowing the classification of each element in only a single category. A clear description of these categories is essential for a coherent interpretation of the data.

Excerpts from the texts of the textbook *Lehrbuch der Physik zum Schulgebrauche*, constituted the units of record and context for analysis. These units, in turn, were classified into four categories: (i) Context of German education; (ii) Training objectives; (iii) Topics; and (iv) Pedagogical methods.

Analysis and Results

In the category Context of German education, elements were identified that make it possible to understand the educational vision of Bavaria at the beginning of the 20th century. Following a period of implementation and expansion of an educational system, from the perspective of a neo-humanist cultural formation, which had been taking over Germany since the 19th century, the author highlighted the need to produce a textbook of Physics that presented a set of knowledge for meeting the Bavarian Secondary School training needs, given the difficulty of finding suitable materials.

In the Formative Objectives category, it was possible to identify the guiding principles for the design and constitution of this material: to present knowledge that should be taught in Secondary Education and what is necessary for general education; to present knowledge of practical use; to present knowledge in a way that students can easily understand; and to present a science which is appropriate to the mathematical knowledge that students bring as a basis for this level of education.

The author does not make it clear whether the selection of knowledge uses any guiding document made official by the State as

a guideline. Maybe this fact can be justified by the vision of free and individual education, and without political interference, which permeated the concept of cultural formation throughout Germany at the time. However, the author emphasizes the importance of the teacher in complementing with more examples, exercises and applications of the knowledge of Physics in different situations that must be worked on in the classroom.

For him, the composition of the textbook's chapters and the proposed activities were organized for the recognition of the laws of nature, for the development of observation skills, analytical reasoning and understanding of more complex physical phenomena, and the preparation of a more comprehensive view of the application of Physics in the world and in its technologies.

At the end of the Preface, the author inserted a note on the revisions and changes made in this latest edition. He stated that some figures were replaced and that the explanations were presented in a more succinct and clearer way to further facilitate the understanding of the knowledge of Physics. These changes resulted, according to Winter (1905), in a curricular adequacy and in the intention to develop student autonomy who, for the author, must find in the textbook itself an explanation that allows him to understand what was not clear in the classroom.

In the Topics category, the textbook was organized into twelve chapters as described in **Table 1**.

Chapter	Subject	Topics
Chapter 1	General Properties Fundamentals of the Study on Forces	Impenetrability, compressibility, porosity, divisibility; Weight, inertia, force; Composition and decomposition of forces; Lever, roller, association of pulleys and gears; Job; Center of gravity, elasticity, grip.
Chapter 2	Fundamentals of the Study on Fluids	General properties; Uniform pressure propagation, ground pressure, lateral pressure, buoyancy, Archimedes' law, specific gravity; Communication tubes, wells and fountains; Capillarity.

Chapter	Subject	Topics
Chapter 3	Fundamentals of the study on gases	General properties; Air pressure, barometer; Dilation and work; Compressibility, Mariottes Law; Specific weight; Compression pumps; Pumps, syringes and pneumatic elevator.
Chapter 4	Heat	State of matter, thermometer; Expansion due to heat; Heat conduction; Amount of heat, heat sources; State change; Steam engine, gas engine; Moisture; Gas theory.
Chapter 5	Magnetism	Basic laws, communication, steel magnets, Earth magnetism.
Chapter 6	Static Electricity	Basic Laws, electroscope, influence, electrophore; Electrifying machines; Condensation, Leydner bottle; Discharge effect; Atmospheric electricity, storms, lightning, lightning rods.
Chapter 7	Galvanic Electricity	Electromotive force, Zambonian column; Galvanic current, elements; Effect of current on magnetic needle, galvanometer; Gradient, electrical resistance; Measurement of current intensity; Drums; Galvani's basic experiment, Volta's contact electricity; Current effects on circuits, grounding, solenoid, electromagnet; electric bell, household telegraph; Telegraph, Morse writing telegraph, needle and pointer telegraph, circuit; electric clock; Chemical effect of electricity; Electrolysis of water and salts; electrolytic law; Polarization; Electroplating.
Chapter 8	Induction Electricity	Induction apparatus; Induction in own line; Induction in a magnetic field, magnetic-electric induction apparatus; Dynamo Machine; Grammescher ring inductor; Electricity thermal effect, arc light, incandescent light; electrodynamic machine, power transmission; Secondary elements, charge accumulators; Telephone, microphone; Thermoelectricity.
Chapter 9	Wave Theory and Acoustics	Origin, form, meaning, reflection of waves; Origin of sound, form of sound waves; Speed, strength, sound reflex; Tone, number of vibrations, vibration ratios of tones; Vibrant strings, overtones; Vibrating bars and plates; Covered and open pipes; Resonance, resonators, interference; Human language; Human ear.

Chapter	Subject	Topics
Chapter 10	Optic	Essence of Light; Transparency, shadow; Speed of light; Photometer; Reflection, flat mirror, spherical mirrors; Light Refraction, Atmospheric Refraction, Boundary Angle, Total Reflection; Prism; Spherical lenses; Human eye, magnifying glass, Projection apparatus; Telescope, opera viewer; Microscope; Stereoscope; Light scattering, spectrum; Achromatic lenses; Fraunhofer lines; Spectral analysis; Color theory; Phosphorescence, fluorescence; Heat rays, chemical rays.
Chapter 11	Mechanics	Lever; Gear train, clock; inclined plane; Wedge, screw; Uniformly accelerated motion; Circular motion; Pendulum; Shock; Living force; Mechanical equivalent of heat; Fundamentals of the study on energy; Transformation, energy conservation.
Chapter 12	Modern Optic (Appendix)	Interference of waves, of light; Diffraction of waves, of light; Polarization; Light birefringence; Absolute units of measurement: the mechanical, electrostatic, electromagnetic and practical units; Electric waves, wireless telegraphy, X-rays.

Table 1. Distribution of topics by textbook chapters.
Note: Information taken from the book *Lehrbuch der Physik zum Schulgebrauche* by W. Winter, 1905.

In this category (Topics), it was observed that Physics' knowledge was divided into two major areas:

– Mechanics: initially presents a part that explores only a simple arithmetic, dealing only with the most basic concepts of Force, Work and Simple Machines and essential for the study of Physics, subjects that are studied after in a more in-depth and articulate way.

– Electricity and Acoustics: these two fields of Physics are seen by the author as adequate to be treated in a deeper way. The author still believes that he presented more than necessary on the knowledge of Acoustics for Secondary Education but justifies the decision by the need for deepening demanded by teacher training courses.

From this perspective, the topics were divided into three levels of depth: a First Level that explores the physical phenomena and laws and theories that underlie it, in a simple sequence of ideas, with broader and more general applications; a Second Level, where a deeper examination of physical phenomena and their models, laws and theories is required; and a Third Level, in which a more rigorous treatment of Physics is carried out, with the use and application of mathematics in a more profound way than in the previous levels.

Observing the organization and division of topics in Table 1, it is possible to distribute the initial chapters (chapters 1 to 4), which deal only with initial concepts, such as knowledge aimed at the First Level of the training process. The intermediate chapters (chapters 5 to 8) are aimed at the Second Level, presenting more in-depth information than the previous level, but still doing it gradually. And the final chapters (chapters 9 to 12) turn to the Third Level of training, demanding a more abstract, deep, and complex analysis of the phenomena explored in comparison to the previous chapters.

In the Pedagogical Methods category, it was possible to perceive the concern with learning scientific knowledge in a practical context, which allows the student to extrapolate the use of this knowledge to situations outside the school environment. There was a concern with continuity in the teaching process, seeking to present content that can be gradually understood and deepened and that is appropriate to the students' previous mathematical knowledge.

Another feature of the author's proposal is the willingness to discuss some physical phenomena from simple experiments and highlighted the importance of exploring the application of Physics in technologies, industrial processes and problems related to commerce, thus tracing a relationship with the reality experienced by society in that period.

Conclusions

The analysis of the material allowed us to observe that the textbook presents scientific knowledge in an organized, specialized and applied way, seeking to meet the educational demands of Secondary Education following the neo-humanist philosophy of teaching in ac-

cordance with the aspirations of the time. It could also be inferred that the textbook under study played an Instrumental Function, as it was elaborated with the objective of facilitating the process of learning Physics, adopting methods of presentation, language and activities that converge into this purpose. The author also emphasized that the didactic actions carried out by the teacher in the classroom should be extended, to give a unique character to the training, according to the *Bildung* perspective that guided the free and autonomous formation of German education at the beginning of the 20th century.

The analysis of this textbook allowed us to understand and glimpse how neo-humanist thinking permeated German teaching since the 19th century, demanding the production of adequate materials to meet the needs of the movement to reform and expand this educational system, aiming to rescue a cultural identity more focused on the individual.

That is to say, it was clear that the textbook was organized in order to set up a continuous training process, with a gradual increase in the degree of complexity. The objectives and justifications adopted as directive precepts for the constitution of the material defined a conception of teaching articulated to the practice and the interaction of the subject with the world, through discussions about Physics in the technological, industrial, and commercial scope that are part of nineteenth-century Germany. Keeping this in mind, the author highlighted the importance of the teacher in the educational process to complete the use of the didactic material with other learning.

As a stimulus to autonomy, he also saw this textbook as a resource that would allow the student to understand possible gaps in the classroom studies, extrapolating the exclusively school use, thus providing the constitution of an individual cultural formation (*Bildung*) that would allow the adequacy of education according to the individual's interests and demands, privileged aspects in the conception in force at the time.

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16.
The Theme of Evaluation: State of Knowledge in Physics Textbooks Researches

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ABSTRACT

The large volume of research on textbooks, in particular related to the Brazilian National Textbook Program (PNLD), indicates the need for periodic assessments to verify the advance of knowledge and point out gaps for further research. The thematic cut is the Evaluation, which is considered a theme of great importance in the field of Physics Education, but little explored in research. Thus, the following research questions were formulated: Has the theme of Evaluation been addressed in research on physics textbooks? Which elements or evaluative processes are focused on by the researchers? Methodologically, this research is a state of knowledge and uses content analysis from pre-defined categories. The documentary corpus was formed by research papers presented at the two main national scientific events in Brazil – the National Symposium on Physics Education (SNEF) and the Meeting of Researchers in Physics Education (EPEF). The search was made in each specific session of the events using the keywords "Evaluation" and "textbooks" as well as their variations. Among other results, it is noteworthy that the research found 82 papers focused on the relationships between textbook and evaluation.

KEYWORDS: *Physics textbooks; Evaluation; State of knowledge.*

Introduction

The concern regarding Evaluation by Physics Teaching teachers and researchers is not recent, and the topic has been widely discussed during Physics Research and Teaching conferences. This is evidenced in the Proceedings published in Bulletin n. 4 of the Brazilian Physics Society in December 1970, when problems concerning the teaching of Physics were presented, including the training of teachers, the structure of schools, teaching careers and didactic and methodological aspects of teaching, such as contents and procedures.

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Here we highlight elements addressed in the presentation made at that symposium by Mrs. Professor Beatriz Alvarenga, from the Federal University of Minas Gerais, known among teachers and students as co-author of a collection of textbooks that has circulated for decades in Brazilian schools. This professor states in the 1970s that classes do not arouse the students' interest; teaching is bookish and academic, and teachers hardly touch on more concrete problems; assessment is carried out only with a view to knowledge, which, in most cases, is low.

Therefore, this issue has worried teacher-researchers for decades. On the other hand, textbooks have gained space in research especially since 2009, when the Brazilian National Textbook Program (PNLD) started the distribution of physics textbooks. The question that arises for this research is to verify the relationship between the themes of Evaluation and Textbook in research in the field of Physics Teaching. Some evaluative studies have been carried out in the country (Shirmer & Sauerwein, 2017; Garcia, 2017) and were used as reference for this project whose objective is to carry out a state of knowledge of the production of research on the physics textbook, with the thematic cut in the Evaluation.

It is noteworthy that the Evaluation is a mandatory topic in the methodological guidelines for teachers in textbooks distributed by the PNLD. It can be affirmed that there were advances in the discussions about the excluding and classifying character of the Evaluation processes, from the 1980s (Luckesi, 1995). The Law 9.394/96, in its Section IV, establishes in Article 24, clause V, that «the verification of school performance will observe the following criteria: a) continuous and cumulative assessment of student performance, with prevalence of qualitative aspects over quantitative ones and of the results throughout the period over eventual final tests" (Brasil, 1996).

Thus, it can be assumed that in textbooks, especially in the teachers' guidance, the theme of Evaluation has undergone changes in recent decades, which justifies the proposal to conduct a mapping of research that addresses this issue. With regard to the subject of Evaluation, one can highlight the difficulties encountered in the teaching-learning of physical knowledge, which are highlighted by teachers and students and also recorded on a daily basis in courses and classes.

Theoretical Framework

The review on the Evaluation theme shows that there is a large growth in published research, indicating a concern on the part of researchers not only with the methodologies and practices, but also in the interference that a classificatory assessment can cause in school performance and in students' lives. It can be said that there were advances in educational discussions about the excluding and classifying character of the Evaluation processes especially in the 1980s and 1990s, in works such as Luckesi (1995) and Garcia (1996). "The practice of academic failure was intensely debated and the educational systems created mechanisms to avoid the high data of retention, often in a single school subject, which forces young people to redo an entire school year and produces high rates of dropout or abandonment. The concepts of Evaluation as a continuous process gain strength" (Cunha & Garcia, 2019, p. 3).

In the Proceedings of the IX SNEF, there are concerns about the Evaluation relating it to school failure; it is even recorded in a round table with the title Evaluation, Retention and School Dropout (p. 121). There is also a record of a working group with the title "The Policy of Evaluation, Dropout, Remedial Coursetaking" (p. 162), which calls attention to the problems related to Evaluation:

> There is no teacher's awareness of what assessment is. He is not always aware about the teaching-learning process in which he is inserted. The evaluation is a very serious problem […] it has not contributed to the growth of the student. Most of the time it is given in a way that the student just repeats what was seen in class, "vomits what he has eaten". There is nothing to think about, only to memorise. This precariousness of assessment is related to the precarious training of the teacher […]. The technical and pedagogical preparation of the teacher leaves much to be desired. As for failing grades, we understand that it only makes sense when there are conditions to recover the student […]. One must know the people with whom one is working and consider the reality in the social historical context (Carvalho, 1991, p. 162).

After the Brazilian General Educational Law, in 1996, elementary education was reorganized in nine years and high school education remained proposed for a minimum of three years, as stated in its Article 35. In accordance with the new law, curricular reforms were devel-

oped in the same decade with the purpose of defining parameters for the reorganization of the national curricula. In particular, it is cited in the National Curriculum Parameters and the National Curriculum Guidelines the need of changes to make teaching closer to the reality of students, suggesting thematic content and methodologies appropriate to contemporary studies in education and in different disciplinary fields.

Regarding evaluation, the Law 9.394/96 states that the high school curriculum shall adopt teaching and Evaluation methodologies that stimulate student initiative. It also highlights that the verification of school performance will observe the following criteria: continuous and cumulative assessment of student performance, with prevalence of qualitative aspects over quantitative ones and of the results throughout the period over eventual final exams (Brasil, 1996).

In the National Curricular Parameters (PCN) and in the National Curricular Parameters Plus (PCN+, a second document to guide the national curriculum), both published in the 2000s, there is a reference related to the ways of teaching and assessing specifically in the case of Physics. According to the documents, the subject would no longer focus on the memorization of formulas or repetition of procedures in artificial situations and would be valuing the meanings of knowledge, already at the time of its teaching to young people. Although the documents were published two decades ago, some problems persist and are currently related to the new propositions of the Common National Curricular Base for Secondary Education (BNCC, 2019), which responds to structural reforms in this educational level that are being implemented after 2017. The BNCC defines competences to be developed and evaluated by schools and the contents are not suggested by the document.

Therefore, in the field of General Didactics and Didactics of Physics the difficulties traditionally pointed out in relation to the teaching and learning of the subject suggest studies not only on the teaching methodologies, but also on the evaluation processes that are being proposed in the textbooks approved in the PNLD, in which the curricular definitions are expressed and circulate in public schools. For this reason, according to Escolano (2006), the textbook can be understood as "edited curriculum", since it meets the curriculum standards, presenting a proposition of content and methodologies for the work in the classes.

The textbooks that have circulated in Brazil in recent decades express, at least in part, what the country proposes for the teaching of different subjects. In Brazil, textbooks are produced by commercial publishers based on public calls for tender that define the rules and criteria for approval by the PNLD. Textbooks, then, are resources made available by PNLD since 1985, free of charge, for public schools and since 2009 it distributes physics textbooks for high school. When approved, after the evaluation process whose criteria are published in notices, the textbooks are included in a Textbook Guide that is available for consultation by teachers through digital means.

One of the PNLD's requirements is that the authors present guidance to teachers about the textbook, its foundations and pedagogical proposal, as well as methodological suggestions for teaching and Evaluation, and complementary reading. Sometimes this material is identified as a Teacher's Manual and has the function of contributing to the formation of teachers. It is noteworthy that according to the results of research conducted by Leite and Garcia (2017), textbooks are not an object of teaching in Physics teacher training courses; they highlight that they should deserve attention from trainers, since the books are a resource used by many teachers and are available for work in schools.

It is added that in the Teacher's Manual there are didactic guidelines on teaching and, in particular, there are considerations and guidelines on assessment that, in theory, the teacher could incorporate into their practices, taking advantage of the suggestions made by the textbook authors (Cunha & Garcia, 2019, p. 6). For this reason, it was chosen to map research related to the two themes, Evaluation and Textbook.

Methodology

Methodologically, the study is a state of knowledge, in the direction indicated by Romanowski and Ens (2006, p. 39). The authors make a distinction between the state of the art and state of knowledge: "the studies carried out from a systematization of data, called 'state of the art', receive this name when they cover an entire area of knowledge, in the different aspects that generate productions". On the other

hand, the study that addresses "only one sector of the publications on the subject studied" is called "state of knowledge".

The research carried out, then, was characterized as a state of knowledge, because the proceedings of the conferences selected for the study were analyzed, which constitutes a segment or cut of the existing production on the subject. The data production strategy chosen was the documental analysis of papers presented at the events of Research in Physics Teaching and published in Proceedings.

The general objective was to analyze the works focusing on physics textbooks, with a thematic focus on Evaluation, published in the proceedings and minutes of the main conferences on Physics Teaching. The specific objectives proposed were: a) to analyze the quantity of publications in these conferences; b) to identify the periods in which these publications were made and the relation with the discussions that take place in the field; c) to identify the types of works presented, whether they are keynotes, lectures, round tables, oral communications, posters, in order to situate the relevance of the theme in the different periods.

Regarding the procedures, the research was organized in the following steps: location and general identification of published works; reading of abstracts; definition of analysis categories; reading of papers; elaboration of tables and development of analysis. The search for the selection of the materials to be analyzed was divided into two phases: in the first phase the search was made by the descriptor "Evaluation", in the keywords or abstract; in the second phase the search was made by the descriptor "Textbook". The search results were organized into charts and tables. With the quantitative and qualitative data organized, indications of relations between textbooks and evaluation were sought.

The identified papers were grouped by means of the following categories: a) researches that deal with Textbook or Evaluation, without establishing a relationship between them; b) researches that establish a relationship between the textbook and the evaluation focusing on the learning process; c) researches that establish a relationship between the textbook and the evaluation focusing on the book evaluation; d) researches that establish a relationship between the textbook and the evaluation focusing on the use of the book. It is noteworthy that these categories were defined a posteriori, extracted from

the reading of the full texts that addressed the relationship between the two themes, keeping a separate category for the research that addressed only one of the themes (Textbooks or Evaluation).

Results and Data Discussion

It is necessary to make a distinction between the two conferences in relation to their proposals. The National Symposium on Physics Teaching – SNEF, which has been held since the 1970s, is more open to the participation of students, researchers in training and Basic Education teachers, as well as other interested parties; it has a large number of registrants and papers presented. The conference accepts experience reports besides research reports and has the purpose of spreading knowledge beyond the restricted academic community.

The Meeting of Researchers in Physics Teaching – EPEF, as the name indicates, was proposed to be restricted to experienced researchers, but over time the rules were relaxed to also accept researchers in training and remains so until now; the conference has a smaller number of participants if compared to the SNEF.

In most editions the published proceedings were available on the website of the Brazilian Society of Physics – SBF. In some editions the website made available only the program, from which one can access the papers presented. In a few events there is not the availability of complete papers, only the summary of the research, which brings limits to the development of research on the state of knowledge or state of the art. Nevertheless, the two conferences made most of the results available over the years and, therefore, they are relevant sources to know the production in the field of Physics teaching.

a) Papers Published in the EPEF

The highest number of papers was found in the years 2010 and 2012, with a total of nine papers in each edition of the conference; the lowest number of papers was found in the years 2014 and 2018. Of the total number of papers found (26), only one was presented as a roundtable. The rest of the papers (25) were presented in oral com-

munication or poster modality, a shorter presentation time and less emphasis in the conference.

This result regarding the modality of presentation can be taken as an indication of little valorization of the theme throughout the editions of this conference; the modalities of round table, lecture or keynotes can be understood as spaces to highlight the themes by the conference or by a group of participants. Only one round table was held in 2012 on the theme of textbooks; however, it was not possible to analyze if there was a relation with the evaluation, since the work was not available on the event's website.

From the categories established for the synthesis of the results, it can be indicated that:

a) Five (5) papers about Textbook and ten (10) about Evaluation were found, which did not establish relations between the themes.

b) As for the papers that establish relations between evaluation and textbooks: three (3) focused on the learning process; six (6) researches focused on the evaluation of the textbook itself; and one (1) research focused on the use of the textbook.

Thus, the results show that the two themes intersected with greater frequency in studies that developed the evaluation of physics textbooks, with less research associating the investigation of the book with evaluative processes of teaching and learning and its use in these processes.

b) Papers Published in the SNEF

The highest number of research on the themes was found in the 2015 edition of this conference (21 papers): one round table, eleven oral communications and nine posters were presented and presented. The lowest number of publications was in 2009: eight papers presented, distributed in five oral communications and three posters.

There is a significant number of papers published in this period (72 papers), when all categories are included. In this search, four papers listed were not located in the material available on the websites. Despite this number, it is confirmed the result found in the EPEF about the modalities of presentation – few round tables (3) focused

on the theme, an indication of low prominence to the problem in more prestigious sessions.

From the categories established for the synthesis of the results, it can be indicated that:

a) Fifteen (15) papers on textbooks and twenty-four (24) papers on evaluation were found, which do not establish a relationship between the two themes.

b) As for the researches that establish relationships between evaluation and textbooks: thirteen (13) focused on the learning process; fifteen (15) researches focused on the evaluation of the textbook itself; and finally four (4) researches focused on the use of the physics textbook.

In the papers of this event the results show that the two themes intersected with greater frequency in studies that focused on the evaluation of physics textbooks and the learning process, with less research associating the investigation of the book to its uses.

Conclusions

Considering the different nature of the two conferences, a comparison of the absolute numbers of papers located in each of them was not carried out. However, an interesting movement was observed between the years 2012 and 2015: while the number of papers grew in the SNEF, it presented a reduction in the EPEF, remaining stable in the later period for the EPEF, while a drop is also observed in the SNEF papers.

One explanation for the increase in the number of papers at the SNEF is the presence at this conference of participants who are undergraduate students, especially students who have been awarded scholarships under the PIBID, a support program for teacher training, in which students are encouraged to make proposals for investigative work in schools and present them at scientific events. It should be remembered that textbooks are present in secondary schools and are possibly used by the scholarship students to prepare classes and activities, which is a common practice at the beginning of the career, when textbooks are a support for beginners.

The survey of the total papers of the two events shows that in both there is a greater participation of papers as oral communication (67) and poster presentation (27). Four round tables were found with recognized researchers, who frequently participate in the events either as authors or as advisors to undergraduate and postgraduate students. It was also found that some authors and researchers on the subject of physics textbooks or Evaluation have papers published in almost all the events and sign several participations, showing that these are not occasional themes in the production of these authors.

Regarding the number of papers in relation in its timeline, it was found that in the first conferences the themes appear with practically the same number of papers and in both conferences (SNEF of 2009 and EPEF of 2010), there was not the presence of a round table dealing with the relationship between the physics textbooks and the Evaluation. During the following editions of the SNEF (2011, 2013, 2015 and 2017), an increasing amount of papers dealing with the relationship focused on in the research is recorded; there was also a round table in each edition of this event that presents some relationship with the thematic cutout chosen. In the EPEF, only one roundtable was located in all editions of the analyzed conference.

Finally, we conclude that the research showed interest in the theme, with a predominance of relations with the learning processes and with the evaluation of the textbook. Researches on the use of physics textbooks were less numerous, indicating a gap that may be the object of new studies. The results suggest attention from students and researchers in Physics Teaching to the processes of choice of textbooks, their contents and their relation with teaching. The researchers are focused on the books approved by PNLD, which are accompanied by teachers' manuals, considered as instruments for the diffusion of pedagogical models and ways of evaluation, contributing to the teachers' training.

The results obtained reaffirm the need and importance of review research as state of the knowledge or state of the art to perform periodic balances verifying advances of the knowledge and pointing gaps to guide new researches.

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4.

DISCIPLINARY DIDACTICS – HISTORY

17.

Brazilian Literary Sources in the History Textbook in Use in the State of Paraná (Brazil)

THIAGO EVALDO ROSA* AND TÂNIA MARIA F. BRAGA GARCIA**

ABSTRACT

The theme of the research is the presence of Brazilian literary sources in history textbooks. The issue was built around the importance of textbooks in Brazilian education since there is a National Textbook Program (PNLD) that evaluates and distributes basic education textbooks for all subjects, in public schools education. Literature is relevant to understanding society in its various times and the use of literary sources to teach History has been defended by Brazilian specialists since the 1980s. There are studies that analyze the presence of sources in the textbooks, but no specific studies on Brazilian literary sources were found, which justified this documental research that analyzed the contents of the history textbook from the final years of primary school, approved in the National Textbook Program 2020 and which was chosen in Paraná, a state in the southern region of Brazil by decision of the Department of Education. The analysis seeks to identify literary sources present in the expository texts of textbooks, and also in activities, exercises, research suggestions, and in reading recommendations, describing the Brazilian literary sources and in the orientations to teachers presented at the guidance manuals.

KEYWORDS: *History textbooks; History and Literature; Brazilian literary sources.*

Introduction

The research problem is justified by the importance of textbooks in Brazilian education, since there is a national program that evaluates and distributes free textbooks for public schools, in all subjects that are part of the basic school (Brasil, 2017b). Textbooks affect the production of curricula, and for this reason their contents deserve attention from researchers; they express knowledge considered nec-

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essary for new generations, but also express different interests and values of a society.

The issue is also sustained by the assumption that Literature plays a relevant role in societies. It enables the understanding of society in its several temporalities, including the present time and, therefore, its presence in textbooks is an indication of this influence and relevance, especially when it refers to the teaching of History.

Thus, the relations between History and Literature constitute the theme of the research presented in this work, which identifies Brazilian Literature in textbooks intended for Primary School students as its sample. The objective was to understand the presence of Brazilian literary sources in history textbooks approved by the National Programme of Books and Teaching Materials, in its edition for Primary School History of the year 2020. Therefore, this paper presents the results of a study with an exploratory approach whose objective was to test concepts and procedures for the development of a research project on the presence of Brazilian literary sources in history textbooks. References, procedures and results are presented below.

Theoretical Framework

The interest of textbooks research is related to its programmatic and instrumental function through which they are conceptualized as pedagogical tools used to guide teaching and assist learning. Content and form that constitute this object can be understood as a selection of knowledge and attitudes that society wishes to transmit to future generations, in a perspective of values perpetuation (Choppin, 2000, pp. 108-109). Thus, understanding textbooks is a way to understand education in a society more extensively.

The issue of the choice of teaching contents was for a long time neglected by the researches of Sociology of Education, but it is known that these choices are produced in the space of power relations and social interactions. The school memory operates from forgetfulness, since what the school teaches is only a small part of the preserved human experiences. This process of choice is not only made from requirements of academic excellence; it suffers interference from political, social and ideological issues, so it is an arbitrary process (Forquin, 1992, p. 30).

The process of selection of teaching content is related to the production and circulation of textbooks. There is a strong consensus among specialists of History and Sociology of Education that the relationship between school knowledge and textbooks for teaching subjects constitutes a double-handed path: textbooks are not only a reflection of curricular orientations, but they also affect the production of curricula.

Moreover, we also accept the assumption that the study of textbooks should take into account the complexity of their relations with society and culture, beyond their relationship with the disciplinary knowledge that constitutes the formal curricula. Regarding the relationships between society and textbooks, there is a specificity that must be emphasized in Brazilian education: the textbooks maintain a tight relationship with the official curricula; and their production is regulated by the Textbooks National Program (PNLD). This particularity determines the need of attention of researchers for the political-institutional dimensions of school culture (Escolano, 2006).

The Program was created in 1985 and in recent decades has become a public policy of free acquisition and distribution of textbooks to students in public schools. The PNLD establishes relationships between different instances of power. Textbooks are produced by commercial publishers, but the government convenes teams of experts to assess the quality of these books. Until 2017, the teams were formed after a public call for proposals; under the coordination of a university, professors with experience in public education and in textbook studies worked with Basic Education teachers to analyze and approve the books based on previously established criteria. The result was published in a Textbook Guide to support basic education teachers in the process of choosing the textbook for use in each school (Moraes, 2018, p. 58).

As of 2017, through Decree No. 9,099 signed by the President of the Republic Michel Temer, new rules were established and universities no longer participated as coordinators in the evaluation process. While maintaining the possibility of school choice, the decree enhanced the school network's choice of textbooks, practically diminishing teachers' participation emphasized for decades by the program itself. The Paraná state government decided to use a single textbook for the entire public school network: the same history textbook is in use in all public schools. We know how the choice of text-

books by teachers follows a path involving several agents, from the central institution to the local influences of the educational systems administration, from the school to the teacher who will use a given resource in the classroom. In the Brazilian case, one of the methodological criteria for evaluating history textbooks in the PNLD is the use of documentary sources for teaching; this is a suggestion presented by curriculum guidelines and academic production since the 1990s (Bittencourt, 1998).

The research reported in this paper was conducted to explore the theme of documental sources for teaching and the problematic was articulated in two axes. The first one refers to the literary sources, the Literature relevance in society and its importance to understand society in its several temporalities, including its current stage (Chartier, 1994, pp. 17-20). The second axis refers to the production of textbooks, in particular history textbooks, and their circulation in Brazilian schools considering the functions of this resource in school cultures in its multiple dimensions (Choppin, 2000; Escolano, 2006) and in its relations with different school agents (Forquin, 1992).

The research focus was defined after a bibliographical review that indicated gaps regarding Brazilian literary sources and their presence in history textbooks. This theme guided the empirical study reported. Candido (1995, p. 3) states that literature refers to all creations of poetic, fictional or dramatic touch at all levels of a society, in all types of culture, from what is called folklore, or legend, to the most complex forms of the written production of the great civilizations. Literature provides representations about the reality of the moment in which it was produced. Thus, studying literary sources allows us to analyze representations that help to understand the past (Chartier, 1994). The author states that the concept of representation is essential when bringing History and Literature together. Although the content of literary sources cannot be seen as truth, it presents versions of social life that were created at the historical moment in which the literary work was produced. The author also highlights that representations are produced by group interests. Therefore, representations are never neutral discourses and they always aim to legitimize attitudes or ideas of a particular group.

According to Chalhoub and Pereira (1998, p. 7), analyzing literary sources present in history textbooks, we can point out the contributions of these sources to the construction of historical knowledge

from the ways in which literature constructs or represents its relationship with social reality.

Methodology

According to the reflection on the relationship between History and Literature and the importance of exploring this relationship in History teaching, considering the outcomes of the literature review carried out, the following research questions were defined: Are Brazilian literary sources present in primary school history textbooks? What functions do these sources perform? In order to answer these questions, we organized an exploratory study with the objective of verifying the presence of Brazilian literary sources in the history textbook in use in all public schools in the State of Paraná, analyzing the functions that these sources perform in the organisation of teaching proposed by the selected textbook.

Among the collections approved and included in the Textbook Guide of the Textbooks National Program – History 2020, it was selected the collection "História Sociedade e Cidadania" (History, Society and Citizen), by Alfredo Boulos Júnior (FTD Publisher). This textbook was adopted in the final years of primary education (6th to 9th grade) in all public schools in the State of Paraná, a state in the southern region of Brazil.

Considering the research aim, the empirical study is characterized as documentary research, since the textbooks constitute the material to be analyzed. In the Brazilian case, textbooks are more than an expression of socially valued knowledge for transmission in the school. As they are materials destined to public schools through an official program of the federal government, the books also express institutional determinations about what and how knowledge should be taught – in this particular case historical knowledge.

The research procedure used was the content analysis, in the approach proposed by Franco (2003), which allows discussing the meaning of certain elements in information available in written documents. For this we sought to locate the presence of literary sources in the books, in different situations such as in the expositive didactic texts and in other activities, exercises, research suggestions and reading indications.

Initially, in the pre-analysis phase, we carried out a "floating" reading (Franco, 2003, p. 44), to know the content of the four volumes of the selected collection and verify themes and subjects presented. This step showed that there would be greater possibility of finding Brazilian literary sources in the 9th grade (Fig. 1), which presents contents related to different Brazilian historical periods, thus indicating the potentiality of presenting such sources in each of the periods addressed.
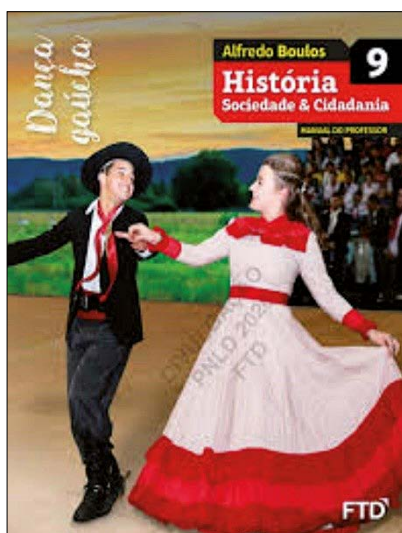
Figure 1. Cover of the volume analyzed.
Source: Boulos Junior (2018). The cover represents two young people dressed typically and performing the *gaucho dance*, a cultural manifestation of southern Brazil.

Two versions of the volume were analyzed: the version for students and the version for teachers that contains didactic guidelines and complementary suggestions for teaching, as well as the digital materials that accompany the paper-book. In the version for teachers, all the pages of the student book are reproduced and the theoretical assumptions for History teaching can also be found, as well as the main methodological recommendations, such as the use of historical sources and different languages (images, literature, songs, among others). We sought, then, to locate literary sources with special atten-

tion to Brazilian ones and to verify how the textbook presents these sources, if there are indications for use in classroom and other guidelines for the development of the didactic process.

Results and Data Discussion

After a new deeply reading in the selected volume, we verify that literary Brazilian sources were referred only in three chapters. Then, the chapters were analyzing in depth because they address historical elements that make it possible to establish relations between different historical periods and different phases of Brazilian literature: "First Republic – Domination and Resistance"; "The Vargas Period"; and "Social Movements-Blacks, Indians and Women".

Each page of the chapters was analyzed, observing the content of the expositive texts for students, the orientation texts for teachers, the images, activities and tasks. We sought to locate the presence of Brazilian literary sources, either as a text presented in its entirety or only in fragments. We intended to know if sources had been used as object of didactic work, if they were just cited, if they were indicated for reading or if they were suggested for complementary work. The results of the analysis were systematized in the following table (**Table 1**).

Chapters analyzed	Quantity of sources	Quantity of Brazilian literary sources	How the sources were presented	Identification of the source located
The Proclamation of the Republic and its consequences	15 sources	1 source (p. 11)	Literary source only mentioned	Novel: Memorial de Aires, by Machado de Assis
First Republic: domination and resistance	25 sources	1 source (p. 38)	Presentation of the complete literary text	Poem: Erro de Português (Portuguese Mistake), by Mario de Andrade

The Vargas Period	23 sources	Two sources (pp. 48 e 57)	Literary sources only mentioned	a) Novel: Vidas Secas (Barren lives), by Graciliano Ramos b) Literatura de Cordel
Social move-ments: black, indig-enous and women	28 sources	Two sources (pp. 61 and 68)	1. Literature only men-tioned in the Teachers Guide 2. Literature suggested to the students	Engaged literature and afro-Brazilian culture in Lima Bar-reto's writings Novel: Direitos das mulheres e injustiça dos homens (Wom-en's rights and men's injustice) by Nísia Floresta Brasileira Augusta.
Contempo-rary Brazil	47 sources	1 source (p. 248)	Literature suggested in the Teachers Guide	Vozes ancestrais: dez contos indígenas (Ancestral voices: ten indigenous tales), by Daniel Mundu-ruku.

Table 1. Systematization of the results.
Source: The authors.

In the methodological guidelines to teachers, the author values and suggests working with literature for History teaching. He states his idea as opposed to that of historians like Hayden White who conceives History as a literary genre. Based on Marc Bloch, he highlights that while literature is fiction, history is committed to evidence (Boulos Junior, 2018, p. IX). Despite the position in favor of literature, the empirical study showed that there is a discrepancy between the value assigned and the proposition of working with literary sources, as evidenced by the quantitative and qualitative analyzes. The first point to highlight is the type of historical sources found. It was noted that cartoons, photographs and historiographic texts are the main sources present in the analyzed chapters, with more than twenty (20) occurrences for each one of them. Few references were made to literary

works or about literature, evidencing a low presence of these sources in the analyzed textbooks.

The second point refers to the presence of Brazilian literary sources, focus of interest of the study carried out. Few references were presented for students and even less frequent was the presentation of the literary works, complete or in fragments. It is noteworthy that only one complete literary text was located, in the chapter "First Republic: Domination and Resistance" – a poem by Mario de Andrade. This historical period began with the Proclamation of the Republic in 1889 and ended in 1930 with the Revolution of 1930, a *coup d'état* that inaugurated the Vargas Period. Defeated in the elections, a national political movement deposed President Washington Luís and brought Getúlio Vargas to power.

From the point of view of literature, this is the period when the modernist movement occurred, with emphasis on the "Week of 22" – the Week of Modern Art. The movement was marked by irreverence in relation to Western traditions and the appreciation of Brazilian life and culture, as well as an understanding of art as an instrument of political and social revolution.

One of its organizers was the poet Mario de Andrade, author of the poem included in the textbook as a literary source to be analyzed, which can contribute to the construction of historical knowledge about that period. It is the poem entitled "Erro de português" (published in 1927) that explores the relationship between the originary populations and the Portuguese colonizer. The title explores the ambiguity of the expression – Portuguese mistake, in a free translation – which can refer to failures in the use of the language, but that in the poem leads the readers to the mistakes and errors of the colonizer in relation to the native cultures.

Other Brazilian literary sources are only referred to students or suggested to teachers, evidencing the absence of methodological proposals for their use. This point should be highlighted as it shows the difficulties in including Brazilian literary sources and, furthermore, presenting working proposals that effectively use the sources for the production of historical knowledge. It was observed that the activities were focused on the interpretation of the text, but did not request historical analysis and interpretation of the source.

Conclusions

Unlike previous editions of the PNLD, the choice of history textbook depends on centralized administration, which establishes a unique book for all schools. Despite their importance for History teaching, and despite the authors position presented in the Teacher's Guide, literary sources do not occupy a prominent place in the analyzed chapters of textbooks' collection used in all public schools of Paraná.

The statement is supported by the results of the empirical study carried out, especially the finding that only one poem is included in the unit in which the author presents the Brazilian artists linked to the Week of Modern Art (1922), a moment in which literary sources could be included as valuable elements for students to analyze the representations of the historical period studied, broadening the historical understanding.

It is also stated that these sources were not privileged despite the possibilities opened by the selected themes, especially social movements. There is a significant production on themes linked to social movements, especially regarding black and indigenous populations and women, intensely addressed in Brazilian literature of different periods.

Considering the function attributed to the literary works included, it is noteworthy that the quotations were made only to illustrate the contents presented or to give brief indications of reading, showing a distance in relation to the objectives and procedures recommended for the use of literary sources in History teaching.

Finally, this is an exploratory study to test strategies and procedures to be used in future research. The small number of Brazilian literary sources in the volume analyzed, as well as the didactic and methodological issues observed in the way they were included, suggest a comparative study with other approved textbooks collections. These other collections are in use in public schools in other Brazilian states that, unlike Paraná, did not decide to choose a unique textbook.

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18.
History Teaching and the Brazilian Common Core Standards: Analysis of the Dichotomous Relationship between the National and the Global Contents in History Textbooks

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ABSTRACT

This article, bibliographic and documentary in nature, analyzes the relationship between world history and national history in the teaching of History in Brazil and, more specifically, how this theme has been presented in the National Common Curricular Base (BNCC) for the last years of the Elementary School approved in 2017. Based on the notions of nation and nationalism (Anderson, 1989; Hobsbawm, 2011) in the context of globalization (Mészáros, 2015b), we analyze their incorporation in the history textbook (Boulos Junior, 2018) selected by the Secretariat of Education of the State of Paraná (SEED-PR) for the 9th grade of the Elementary School. The objective is to understand how these themes were addressed in the prescribed curriculum and textbook. We understand the curriculum as a selective choice, ideological apparatus and producer of hegemony (Apple, 1982), and the textbook as a vehicle of a system of values, ideologies, culture of a given time and society (Bittencourt, 2009). Based on the technical content analysis procedures, we concluded that the approved BNCC once again reinforced the distinction between national history and world history. As far as the textbook is concerned, the globalization model envisaged by the author seems inevitable and the nation appears stuck in the past as if it were not part of the 21st century.

KEYWORDS: *History teaching; Curriculum; National common curricular base; Nation and nationalism.*

Introduction

Throughout its trajectory, the discipline of the History of Brazil has either been oriented towards the consolidation of the nation-state, the consequent formation of a national identity and the

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spread of a patriotic nationalism, particularly aimed at the maintenance of political power and economic privileges, or it has been linked to training for the exercise of citizenship. Beginning with the curricular reforms of the 1990s, however, Bittencourt (1992/1993; 2003) observed that the construction of a national identity began to be redefined according to other parameters linked to the social and economic changes taking place in Brazil, globalisation and the transformations of the role and power of the state in the new world economic order. In this context, the relationship between the national and the global has been subjected to a logic much more attentive to the identification of the individual as belonging to the globalized capitalist system.

Reflecting on the concept of "national identity" and the teaching of History in Brazil, Bittencourt (2009, pp. 155-156) argues that "in the era of globalization, of the spread of the cult of globalization, nationalism appears as an outdated and often limiting value of modernization". While, on the one hand, "modernization and technology are easily associated with the world of globalization" – as if technological advancement by itself also represented social progress and as if globalization embraced everyone at the same pace and under the same conditions – on the other hand, "everything that refers to nationalism is understood as a representation of backwardness".

From this point of view, the research focuses on certain questions: to what extent can the prescribed curriculum reproduce the socio-economic interests of certain sectors of society? Similarly, in what sense does a selection of content that privileges the history of Brazil and problematizes issues related to the nation-state in the context of globalization represent a valid thematic focus? If faced with the need to consolidate a national identity, the State has always called into question the teaching of History, how do we move today in the era of globalization? Is there still a need to think about History teaching that equates the unequal selection of content between national and world history, or at least problematizes the relationship between globalization and globalized nations?

To reflect on these issues, we assume, based on Apple (1982), that the curriculum is never a mere neutral aggregate of knowledge that somehow appears in the texts and classes of a nation. On the contrary, it is constituted as a selective tradition, whose contents are selected by someone and represent some group vision with respect to the

knowledge that is considered legitimate. Thus, "out of every possible field of past and present, certain meanings and practices are chosen as important, while others are neglected and excluded" (Apple, 1982, pp. 15-16).

The prescribed curriculum can also represent, as Apple suggests, "ideological configurations of dominant interests in a society". In this sense, the author proposes to problematize educational knowledge itself, to pay more attention to the "content" of the curriculum, in order to ask where this knowledge comes from and to whom it belongs and which social groups it supports (Apple, 1982, p. 27). It is also necessary to consider the curriculum as a producer of hegemony, since it reproduces ideas and values of the ruling class, as well as the indisputability of capital. We defend, therefore, that the selection operated by the BNCC formulators approved in 2017 represents and supports certain social interests in dispute in society, and this is manifested in the edited curriculum, the textbook. We argue that there is, in the documentary corpus analyzed, a neglect of the notion of nation-state in favor of a supposed integration under equal conditions to all countries and continents in the context of globalization.

The present work is a bibliographical and documental research, of qualitative nature and of descriptive and interpretive character. Following Santos, Martins and Garcia (2021), and Rodrigues Junior (2021), it is supported by technical procedures of document analysis and elements of Content Analysis according to Bardin (2011), Franco (2008) and Moraes (1999). Our analysis is oriented to identify what is being said, that is, "the characteristics of the message itself, its informational value, the words, arguments and ideas expressed in it" (Moraes, 1999, p. 3).

The documents listed for analysis are the history text for the final years of Elementary Education (EF) of the National Common Curricular Base (BNCC) approved in 2017, and the didactic collection "História: Sociedade & Cidadania" by Alfredo Boulos, edition of 2018, participant of the 2020 National Textbook Plan (PNLD). This option is justified by the fact that this collection has been adopted, as of 2020, for the entire state public network of Paraná. It is important to highlight, however, that its adoption did not constitute a consensus. In fact, it was an imposition of the State Department of Education, which disrespected the choice of schools. Until the 2020 PNLD, schools had autonomy to choose their textbooks.

Based on Bittencourt (2009, pp. 301-302), we see the textbook as a support for the school knowledge proposed by the educational curriculum and, at the same time, as a vehicle for a system of values, ideologies, a culture of a given time and a given society. Likewise, we understand the textbook as one of those responsible for the construction of specific historical knowledge that is assumed to be legitimate. Textbooks also sometimes contribute to the construction of a simplified and erroneous understanding of history, considered in most cases, as the only reliable source of historical knowledge (Chaves, 2019). For the purpose proposed here, we have organized the work in three parts: after this Introduction we will proceed to a problematization of the role of the nation-state in the context of globalization and try to characterize Brazilian foreign policy in the face of a progressively globalized economy. Next, we will present the course of History teaching in Brazil in different historical contexts, paying attention to the relationship between national history and world history. Finally, we analyze how this relationship between the national history and world history has materialized in the history textbook intended for students of the 9th of Elementary School of the state public network of Paraná, with emphasis on the theme of globalization.

Nation-State and Brazilian Foreign Policy in the Context of Globalization

Benedict Anderson writes that nation, nationality and nationalism are concepts that are "difficult to define, let alone analyse". However, without shirking the debate, he proposes that the nation is "an imagined political community". It is imagined as limited, as sovereign and as a community. The nation is imagined as sovereign because it dreams of being free. Hobsbawm (2011), in turn, argues that definitions of nationhood based on subjective criteria, suggesting awareness of the existence of a nationality, or on objective criteria based on common language, ethnicity, territory or culture, are unsatisfactory and misleading (Ibid., pp. 15-18). Instead, he proposes to treat the nation as "any sufficiently large body of people whose members consider themselves members of a 'nation'" (Ibid., p. 19).

Reflecting, however, on nation and nationalism at the end of the 20th century, Hobsbawm questions whether these terms are adequate to describe the political entities described as such, as well as to analyze the sentiments once described by these words. The author himself argues that they are not (Hobsbawm, 2011, p. 208). "Nationalism no longer presents itself as the main vector of historical development" (Ibid., p. 186) and "the 'nation' is in the process of losing an important part of its old functions, namely that of constituting a 'national economy', 'territorially confined'" (Ibid., p. 197). "Transformations in the international division of labour" and the "development of international centres and networks of economic transactions that are beyond the control of state governments" are, according to Hobsbawm, undermining the role of national economies, replaced as they are by "broader associations or federations of 'nation-states', such as the European Economic Community, and by collectively controlled international entities such as the International Monetary Fund" (Ibid., 2011, p. 198).

If for Hobsbawm "nation" and "nationalism" are not adequate terms to analyze the role of the nation-state in the context of globalization, this does not seem to be the position of Mészáros. The Hungarian philosopher characterizes the alleged reduction in the power of nation-states as a great exaggeration "flaunted by governments with the aim of justifying their failures to promote even the very limited social reforms solemnly promised by them" (Mészáros, 2015a). For Mészáros, therefore, reality "is not the elimination of the aspirations of national states". On the contrary, we would be witnessing, according to the author, the "overheating of a cauldron of dangerous antagonisms and contradictions on several levels, all located between the current national states and those that aspire to become national states", including, "the structures created to resolve interstate antagonisms such as the European Union – which is very far from being unified" (Mészáros, 2015a). At the same time, with the deepening of capital's structural crisis, the state begins to occupy an ever-increasing space to fulfill the function of guaranteeing the most adequate conditions for the cumulative and expansionist reproduction of the capital system (Mészáros, 2015b, pp. 28-29).

When we analyze the insertion of Brazil in a globalized world, from its foreign policy after 1985, with the end of the civil-military dictatorship, a central characteristic seems to point to a two-way path.

On the one hand, Brazil would have assumed the precepts of the international market imposed by international organizations, giving in to demands for greater competitiveness, fiscal adjustment, cuts in public spending, privatization of public goods and counter-reforms. On the other hand, it was guided by the guarantee of development, understood as synonymous with social well-being and greater South American integration (Martins, 2018, p. 408).

The policy of rapprochement with South America was inaugurated during the presidency of José Sarney, notably with Argentina, a country he visited several times between 1985 and 1986. Together with Uruguay, the three countries signed on December 11, 1986 the "Minutes of Friendship", paving the way for the future Common Market of the South (MERCOSUR). On December 18 of the same year, the "Rio Group" was created, bringing together Argentina, Brazil, Colombia, Mexico, Panama, Peru, Uruguay, and Venezuela. Between 1986 and 1988, Sarney carried out an intense schedule of visits to various countries in the so-called southern cone. In 1989, in the face of the US discursive onslaught, the "Declaration of the Amazon", signed by presidents of Amazonian countries, reaffirmed sovereignty over the forest. On November 1 of the same year, Portugal, and the heads of state of Portuguese-speaking countries met in São Luís do Maranhão, giving rise to the International Institute of the Portuguese Language, contributing to the creation, in 1994, of the Community of Portuguese Language Countries – CPLP. On March 26, 1991, the Treaty of Asunción creates the Southern Common Market – MERCOSUR (Martins, 2018, pp. 392-398).

It is important to note that MERCOSUR is not the only regional multilateral organization formed in South America. Since 1980, the Latin American Integration Association – ALADI has existed, formed by 13 member countries and, in 2004, the South American Community of Nations – UNASUR, whose function is to coordinate the integration of MERCOSUR with the Andean Community. In addition to all these entities, Brazil is also part of the Inter-American Court of Human Rights, based in São José, Costa Rica (Martins, 2018, p. 408).

Like Sarney, each of the following post-dictatorship presidents, according to Martins, left their mark on international relations. Collor (1990-1992) also made trips to the Southern Cone, seeking to consolidate the Brazilian presence in the region. He clearly acted in favor

of neoliberalism as a means of modernizing the country and bringing it out of isolation. During his government, regional and global plans were articulated around "economic opening as a vector of modernization and democratic values". Fernando Henrique Cardoso (FHC) (1995-2002) worked to keep Brazil in the major world forums. During this period, foreign policy was marked by "pragmatist institutionalism": "acting in institutional forums in order to obtain effective relative advantages". The Lula government (2002-2010) went beyond pragmatism and sought a foreign policy of "affirming the international leadership" of Brazil, granting financial support to African and South American countries. With the same objective, the Lula government multiplied the permanent diplomatic missions abroad and increased the number of diplomats in the Brazilian foreign service (Martins, 2018, pp. 396-402).

It is essential to highlight, still according to Martins, the "intense rhetoric of sovereignty and national interests, with emphasis on alliances in the political, geographic and economic south" (Martins, 2018, p. 403). Among the purposes of his government, the intention to "democratize globalization" was evident, expressed in the desire to strengthen the role of the State as an international negotiator; in the sovereign defense of national interests; in creating alliances with emerging countries aligned with such intentions; equalization in the dialogue with the countries of the "North" expressed in the refusal of "subservient dependence" and, finally, in the "value-based moralization" of the fight against hunger and eradication of extreme poverty (Martins, 2018, p. 403).

From the programmatic point of view, despite the ideological postures of the heads of state who passed through the presidency, the Itamaraty's performance, asserts Martins, was based on a "State policy". In the long term, the hallmarks of Brazilian diplomacy include the constant defense of the self-determination of peoples, the principle of non-intervention and peaceful solutions. Among the vectors of foreign policy, development, perceived as synonymous with social well-being, was also present (Ibid., pp. 407-408). In this context, the defeat of the Free Trade Area of the Americas, the ALCA, proposal presented by the President of the United States, George Bush, in 1994, is of fundamental importance. Either because of the distance maintained during the development phase (1930-1960) to guarantee economic development, or because of the option of the FHC govern-

ment to participate in international institutional spaces, or because of diversification as in the Lula government (2003-2010).

Nation-State and History Teaching in Brazil – The Relationship Between National and Global

Citizenship already figured as the purpose of History teaching since its establishment as a school subject, but it was a citizenship subject to the interests of the nation-state in forging a patriotic national identity, reproducing the cult of 'national heroes' and civic festivals (Bittencourt, 2003; 2009). Also in the imperial period, in the 1870s, the teaching of Brazilian History, for primary schools, included "the transmission of a 'national history'", aimed at "the constitution of a 'national identity'", as well as "a moral and civic education", with the contents "prepared to construct an idea of nation associated with homeland, integrated as indissoluble axes" (Bittencourt, 2009, pp. 60-61). The proclamation of the Republic (1889) led, according to Nadai, to the need to consolidate a national identity by imposing on the school curricula "a unique past in the constitution of the nation" (Nadai, 2000, p. 24) in which the different ethnic groups were presented in a harmonious and non-conflicting way for the formation of the Brazilian nationality. Thus, black Africans and indigenous peoples were treated, according to Nadai, as "cooperators in the work of colonisation/civilisation carried out by white Portuguese/Europeans and Christians", thus denying their ethnic-cultural specificities (Nadai, 2000, p. 25). The objective of teaching History was the formation of a common identity, "the national citizen". It was in this context that the theory of racial democracy was constructed. In secondary schools, in turn, national identity was presented, almost exclusively, by addressing the issue of Brazil's insertion into the Western and Christian world. National identity was constituted on the perception of a Brazil belonging to the European civilized world and according to racist values that place the white as superior, as presented by Bittencourt (2003, p. 194).

As of the Francisco Campos Reform in 1931, training for the exercise of citizenship was once again reaffirmed as the purpose of the discipline of History. It was, however, an exclusively political citizen-

ship, affiliated to the liberal tradition and focused on the consecration of the leading social groups that had access not only to the school, but to the political life of the country. The recent social rights were presented as a gift from the new government (Abud, 1992, pp. 165-167).

Until the 1970s, a teaching of History prevailed in which Brazil was linked to a conception of "genealogy of the nation". National History was taught after students "discovered the cradle of civilization, starting their studies in classical antiquity" and, following the European quadripartite temporality, approached the middle ages and arrived at the birth of Brazil in the Modern Age. From this perspective, the nation-state was presented as the main historical subject of the history of Brazil (Bittencourt, 2003, p. 196).

In the 1980s, faced with the possibility of the state's rewriting their school curricula, new proposals for teaching History were developed with the concern of giving voice to the excluded, bringing actions and subjects hitherto silenced by the history taught to the center of the debate. The curriculum proposals of the 1990s brought changes regarding the question of identity, however with the concern of identifying the individual as belonging to the globalized capitalist system. There remained, therefore, a history in which "Brazil was born from Europe", whether as a result of "discovery" or European mercantilism. Thus, national history did not originate in the national space, but in the central place of emerging capitalism (Bittencourt, 2009, p. 101).

The controversial National Curricular Parameters, published in 1998, inaugurated a new phase in the teaching of History, fundamentally, by suggesting a curricular organization by thematic axes, enabling a non-linear approach based on new temporalities and suggesting, as a selection of contents, the prevalence of teaching of Brazilian History and its relations with the different societies and cultures of the world. As one of the purposes of History teaching, the PCN reinforced training for the exercise of citizenship (Brazil, 1998).

Nation and Globalization in the BNCC of History of the Final Years of Elementary School

In the BNCC, approved in 2017, the discipline of History is included, along with geography, in the area of human sciences. The

course presentation consists of three texts. A general text, titled only "History" (Brazil, 2017, p. 397); a second, titled "History in elementary education – early years" (Ibid., p. 403), and, finally, a last text entitled "History in elementary education – final years" (Ibid., p. 416). However, according to Sczip (2020) these texts, far from discussing the assumptions that would underlie the permanence of history in the basic education curriculum, are characterized by the absence of epistemological elements and, also, of theoretical-methodological references of history and the field research on History teaching. At the same time, they do not define important notions for the teaching of History, such as fact, event, time and historical process. In addition to these texts, there is also a session designed to present the specific topics to be addressed in each series. This session is broken down into thematic units, knowledge objects and skills for students to develop. From reading this document, we have extracted the terms globalization, global, nation, nationalism, national, international and nation-state.

The subject presentation text for the final years of elementary school, the central focus of our analysis, follows the traditional periodization of history: Ancient Age; Middle; Modern and Contemporary. Thus, the 6th year should study Classical Antiquity and Medieval Europe, covering contents referring to the African continent of the same historical period (Brazil, 2017, p. 417). The 7th year will address the connections between Europe, America, and Africa, encompassing the 15th to the 18th centuries (Ibid., p. 418). The historical facts considered most relevant in global history that occurred throughout the 19th century are destined for the 8th year, as well as the independence processes in the Americas, with emphasis on the independence process in Brazil. Finally, it is in the 9th year that the history of Brazil assumes greater prominence, starting with the proclamation of the republic (1889) until the present day. However, it will compete for space with content referring to the 20th and 21st centuries in Europe, Africa, Asia, and Latin America (Brazil, 2017, p. 418).

According to the introductory text, therefore, it is in the 9th grade that the history of Brazil should be more present. Among the 40 subjects listed in the BNCC, twenty-two are reserved for topics related to the history of Brazil throughout the 20th century and the beginning of the 21st. Of these, two address contents of Afro-Brazilian culture and the other three, indigenous cultures. There are also two other themes that jointly address Afro-Brazilian and indigenous culture. It is impor-

tant to note that, of the four thematic units of the History discipline for the 9th grade, two are specifically about the history of Brazil.

	Year	Historical Period	National versus Global Relationship in BNCC de História – final years of EF		
			Global (Europe/ Africa/Asia/ Americas)	National and/ or Integrated	Total
BNCC of History – final years of Elementary School	6th year	Classical Antiquity and Medieval Europe	15	01	16
	7th year	Connections between Europe, America, and Africa, spanning the 15th to the 18th centuries	16	04	16
	8th year	Global History of the 19th century; Independence Processes in the Americas	11	11	22
	9th year	The Proclamation of the Republic in Brazil (1889); Europe, Africa, Asia and Latin America in the 20th and 21st centuries	20	22	40

Table 1. National versus Global Relationship in the BNCC of History for the final years of Elementary School.

Analyzing the National and Global relationship in the BNCC, we observed the absence of the expressions "global", "globalization", "nationalism", "national", "international" or "nation-state" in the general text of the subject's presentation. The word "nation" as an allusion to Brazil, however, appears only once to criticize a History teaching

that reinforced the "image of a nation constituted along the lines of European colonization" and its consequent "stereotypical views" of indigenous and black Africans (Brazil, 2017, p. 401).

In the session for the final years of primary school, we recorded the presence of the terms "global", "nations", "nationalism" and "national". It is important to emphasize, however, that the term "global", although present, is mobilized, firstly, as a justification of the option for linear chronology, and not to problematize the relationship between "national" and "global". Secondly, for the "constitution of a global vision of history", understood as "the phase of relations between Brazil and the rest of the world throughout the centuries" (Brazil, 2017, p. 416).

Throughout the text, the only reference to the term "nation" concerns the possibility of addressing issues related to the inclusion or exclusion of blacks and indigenous people "in the newly formed nations of Brazil and America throughout the 19th and 20th centuries" (Brazil, 2017, p. 417, emphasis added). "Nationalism" also appears only once, when it establishes that in the 8th year Africa, Asia and Europe should be studied, "with emphasis on nationalism, imperialism and resistance to these discourses and practices" (Ibid, p. 418). "National", likewise, appears only once associated with global and national conflicts of the 20th and 21st centuries, which should be studied in the 9th grade.

As regards content, the History "knowledge objects" listed by the BNCC for the last years of primary school indicate the relationship between "national" and "global", the notions of "nation", "nationalism", "globalization", "global", "national", "international" and "nation-state". They constitute objects of knowledge and competences for Year 9, whose curricular prescription provides for a balanced approach between Brazilian history and global/world history. Therefore, attention is drawn to the absence of the notion of nation-state precisely in the series in which the history of Brazil in the 20th and 21st centuries, and specifically globalization, will be addressed. How can one think of the relationship between nation-states, in this context, without the notion of the nation-state? Is it possible to address the topic of globalization without paying attention to the role played by the United States of America "as an aggressive and dominant nation-state" (Mészáros, 2015b, p. 104, emphasis added), or even to the reasons that led England to leave the European Union?

Regarding the idea of "globalization", it will be studied in the context of the end of the Cold War, with the objective of "(EF09HI32) analyzing changes and permanence associated with the process of globalization, considering the arguments of movements critical of global policies", as well as the "transformations in local and global political relations generated by the development of digital information and communication technologies" (Brazil, 2017, p. 433).

From what has been exposed so far, and from the table above, we would like to highlight some issues. First, that the history of Brazil, understood as national history, has been present in the basic education curriculum since the second half of the 19th century, however, as Bittencourt highlighted, as an appendix to world history and subject to the interests of the nation-state. Second, that the curricular changes for the teaching of History have walked in consonance with the country's political conjuncture. Third, that the ability listed for the topic of globalization, cited above, suggests an approach that considers the arguments of movements critical of global policies, however, it makes no reference to the role played by nation-states in this context. Finally, as we can see in the table above, it is from the 8th grade, according to the BNCC, that the history of Brazil gains greater relevance and, in the 9th year, assumes a major role, bearing in mind the fact that the number of themes related to national history is superior to those destined to world history. In the next item, we will seek to reflect on how the last two questions raised here will be incorporated into the history textbook.

Nation and Globalization in the History Textbook of the 9th grade of Elementary School

With the objective of analyzing the relationship between national history and world history in the history textbook from the institution of the national curriculum in 2017, we selected the content referring to the statement in the BNCC by the object of knowledge: "Brazil and its international relations in the era of globalization" (Brazil, 2017, p. 430). The option for this content, intended for the 9th grade of Elementary School, is justified by the fact that its objective is precisely to analyze the performance of Brazil in the context of globalization, that is: "(EF09HI27) relate aspects of economic, cultural and cultural

changes that occurred in Brazil from the 1990s onwards to the country's role on the international scene in the era of globalization".

The didactic material selected for analysis was "História: Sociedade & Cidadania" by Alfredo Boulos (2018), participant of the 2020 National Textbook Plan (PNLD). Such an option is justified by the fact that this collection has been adopted for the entire state public network of Paraná. It is important to highlight, however, that its adoption did not constitute a consensus. In fact, it was, as we said above, an imposition of the State Department of Education, which disrespected the choice of teachers.

The collection is organized into four volumes, one for each series of the final four years of Elementary School. Bearing in mind that the theme of our interest – Brazil and its international relations in the era of globalization – is present in the 9th grade issue, we will focus our analysis on this volume, more specifically on the two chapters that address the subject. The theme appears twice. The first is a section of chapter 14, entitled "Contemporary Brazil", which begins with the last dictator of the military period, João Figueiredo (1979-1985), and goes until the impeachment of the legitimately elected president, Dilma Rousseff, in 2016. The section, entitled "Brazil expands its external visibility", takes up one page. The second reference to our theme is inserted in chapter 15, "End of the Cold War and Globalization".

The volume is divided into 15 chapters and four "units", but without identification or title that indicates what will be studied in each of them. The book begins with four chapters devoted to the history of Brazil, starting with the proclamation of the republic in Brazil (1889) and its developments until the first Vargas government (1930-1945). One of the chapters deals with the social movements of blacks, indigenous peoples, and women, from the post-abolition period until the 1960s. A very pertinent finding is the absence of the Revolt of the Whip (1910) in the chapter reserved for discussing "Domination and resistance in the first republic". The second unit is all focused on the canonical contents of 20th century European history: World War I, Russian Revolution, Crisis of 1929, rise of Fascism and Nazism and World War II. The third unit, the most extensive, has five chapters that address the socialist revolutions of China and Cuba, the struggles for independence in Africa and Asia, Brazil between 1945 and 1964 and, finally, the dictatorships in Latin America, including the civil military dictatorship in Brazil (1964-1985). The last unit has only two chapters: one focuses on Brazil from Figueiredo to the impeachment of Dilma Rousseff and

the other covers the end of the Cold War, globalization, and the Arab spring. We note that among the 15 chapters, six specifically address themes from the history of Brazil. The civil military dictatorship in Brazil is studied in the same chapter as dictatorships in Latin America.

For what interests us here, globalization is a sub-item of chapter 15, entitled "End of the cold war and globalization", composed of six pages, to be worked together with the end of the cold war and extinction of the Soviet Union. Brazilian foreign policy, dealt with in chapter 14, boils down to a half-page text, in which, in a very concise way, it mentions Brazil's "entry" into the group of the 19 largest economies, plus the European Union – the G-20, the formation of the BRICS and the strengthening of relations with the countries of South America (Boulos Junior, 2018, p. 238). The figure below shows the opening page of the chapter.

Figure 1. Extract from the textbook Boulos, *História: Sociedade e Cidadania*, 2018, p. 249. The photographs suggest that the phenomenon of Globalization affects everyone in the same way, at the same time and in different places.

To introduce the study of globalization, the author selected three photos of families that appear to be from different parts of the world, all with the same attitude: taking a "selfie". In the three images, the composition of the family is identical: heterosexual couples and two children, a girl, and a boy. The stereotype of families – one white; one black; an oriental one – suggests that they are different regions, but with a very similar scenario: a wooded park. In the three posed photographs, everyone is smiling and looking very happy. Below the images is a text proposing some problematizations:

> Can you guess which country or region the people in these pictures are from? Have you noticed that people from different parts of the world consume the same soft drinks, the same clothes and the same cell phones and have very similar behaviors? Effects of globalization, say some analysts. But, after all, what is globalization? What comes to your mind when you read or hear that word? Is it a recent phenomenon or an old one? Will it be an exclusionary process, as some say, or will it be inclusive, as others suggest? (Boulos, 2018, p. 249; authors' translation).

The questions raised by the author seem to suggest that we are facing a phenomenon that affects different parts of the globe in the same way. This would be evidenced by the behavior and consumption of the same goods even in different regions. So far, the references to globalization are all positive, from the happy people in the photographs repeating the same attitude, to the questioning phrase that suggests that globalization is an event that affects everyone in the same way and under the same conditions. An exception is the word "excluding" as opposed to "inclusive" in the last sentence of this set of questions.

The logic of the introduction is repeated in the set of images selected throughout the session. In the six pages dedicated to the theme, there are seven photographs and a poster. Except for the latter, which alludes to the 2018 World Social Forum, and a photo that shows Margareth Thatcher and Ronald Reagan together in a ceremony, all the others attribute positive aspects to Globalization, reaffirmed by the author's texts or by excerpts from historians, such as it happens with the image presented in the first of the four sessions that seek to present characteristics of Globalization. It is a photograph inside an operating room with a doctor and a patient on a stretcher, whose caption indicates "application of technology in the field of medicine" in

a clear association between globalization and technological advancement (Boulos, 2018, p. 254).
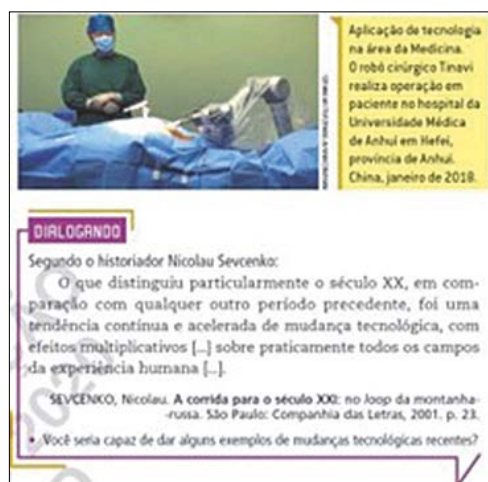
Figure 2. Extract from the textbook Boulos, *História: Sociedade e Cidadania*, 2018, p. 254.

In this first session entitled "Globalization", the author presents in the first paragraph his understanding of the theme: "Globalization can be understood as a historical process of growing political, economic, social and cultural interconnection between different peoples and countries" (Boulos, 2018, p. 254). Defined in this way, it does not seem to be a contradictory process. On the contrary. Its initial definition reinforces the idea of integration of different nations at the same time and under the same conditions.

In the following session, entitled "Globalization: characteristics", Boulos (2018, pp. 255-256) lists four characteristics of the global phenomenon: "internationalization of production"; "information circulation"; "increase in the circulation of capital" and "extraordinary increase in world trade". Here again, the texts emphasize positive aspects of globalization, except for a single reference in the first item to the fact that transnational companies prefer countries with cheaper labor, low taxes and precarious labor and environmental legislation. Regarding the "circulation of information", the author takes

the formation of a "global culture" as certain: "in the cultural aspect, the advent of the internet favored the formation of a global culture" (Boulos, 2018, p. 255). The content of the page is illustrated by a photograph that shows a couple with a child laughing in front of a tablet with an image of an elderly couple. Everyone looks very happy.

Figure 3. Extract from the textbook Boulos, *História: Sociedade e Cidadania*, 2018, p. 255.

In the next item, on capital circulation, the author states: "an immense amount of money circulates around the world in search of quick profit". It then differentiates between speculative capital and industrial capital, but does not problematize the harmful effects of speculative capital on national economies, especially south of the equator, and, fundamentally, does not question the contradiction between free movement of capital and restrictions on the movement of people, with deportations of immigrants and walls that aim to prevent people from entering, especially in some European countries and in the United States of America. The characteristic of the commercial surge is illustrated by a Russian cargo plane unloading goods.

The next text, "Effects of Globalization on Employment", is yet another ode to technological progress. The author emphasizes the characteristics related to the technical-scientific-informational

Revolution, such as the availability of products at lower prices, the speed of information circulation and the free circulation of goods and capital. However, after highlighting these characteristics, illustrated by a photo of a robotic assembly line in the automobile industry in Germany, he presents some of the disadvantages of this process, among them the growth of unemployment. Here, for the first time, the opposition between rich and poor countries appears (Boulos, 2018, p. 258).

Figure 4. Extract from the textbook Boulos, *História: Sociedade e Cidadania*, 2018, p. 258.

Here, once again, the author selects an image that aligns technological advances with the process of Globalization, suggesting that it is a phenomenon that affects everyone in the same way and under the same conditions, disregarding that, while there are highly skilled and complex jobs, there are also extremely precarious jobs, such as app workers (Antunes, 2018; 2019; 2020).

In line with what was proposed by the BNCC, the study of globalization concludes with the topic "Protests against globalization" in which the author mentions only one of the anti-globalization movements, the World Social Forum, presented as "a space for the production of alternatives to the model of globalization" dominated by large corporations and international organizations. Then he lists what

he considers to be the main criticisms of the opponents of globalization: Destruction of jobs and increased exclusion; economic instability; imposition of fiscal adjustments and cuts in public spending (Boulos, 2018, p. 260). There are no references to the 1999 "Battle of Seattle", the marches against World Trade Organization and World Economic Forum meetings, or even the Occupy Wall Street movement. Problematizations were lacking in relation to economic blocs and the BRICS initiative, which is proposed as an alternative to the International Monetary Fund and the World Bank.

A general feature of the text is the non-presentation of data, comparative tables, or specific situations of how globalization affects Brazil or other countries. The chapter under analysis does not present texts that explain the effects of globalization on countries on the periphery of capitalism, because, as it is, the effects of globalization, as well as the criticisms, are generic, and the subject of history seems to be the very globalization. There is little evidence in the texts that there are globalizing countries and globalized countries. At the same time, there are no references to disputes between economic blocs and between these and national states. Likewise, the relationship between local/national versus world/global was little problematized. The line of exposition of the theme follows the author's understanding of globalization, presented in the first paragraph of the introductory text, as if we were in fact facing a process of "growing interconnection" between peoples and countries on equal terms.

Relevant, however, is a topic inserted among the texts that brings a list of five arguments against and in favor of globalization. However, there is no proposal for problematization or any guidance for working on these arguments. The text is accompanied by two photographs taken in two Brazilian cities. The images that illustrate this topic, as well as the others, make a positive allusion to globalization. The image posted next to the points considered critical of globalization reinforces the favorable aspects of integration, production, and global trade in a supposedly level playing field.

In the space reserved for activities there is another point to be highlighted. It is a fragment authored by geographer Milton Santos entitled "For a more human globalization", from which students must answer four questions, among them, and explain the idea of "perverse globalization" defended by the author (Boulos, 2018, p. 269).

PARA SABER MAIS

Argumentos dos críticos às políticas globais

1. A flexibilização da legislação trabalhista retira direitos sociais dos trabalhadores.
2. O uso da terceirização e da subcontratação pelas empresas provoca a diminuição no número de empregos com carteira assinada.
3. O controle das políticas econômicas dos países mais pobres e emergentes por organismos internacionais (FMI e Banco Mundial) acaba levando esses países a reduzir investimentos em saúde, educação e segurança pública.
4. A imposição de uma cultura única ameaça a diversidade e os valores culturais locais e regionais.
5. A prioridade dada ao crescimento econômico tem causado a degradação ambiental – ar, terra e água.

Vitrine de loja em *shopping*. Jundiaí, SP, 2017.

Argumentos dos favoráveis às políticas globais

1. Aumentam a concorrência entre as empresas e diminuem os preços das mercadorias.
2. Possibilitam a um número maior de pessoas o acesso a bens e tecnologias, como celulares, *smart TVs* etc.
3. Favorecem a integração de povos e culturas pela internet e pelas redes sociais.
4. Permitem-nos saber o que ocorre ao redor do mundo em tempo real.
5. Ampliam os mercados e favorecem um aumento do comércio mundial, o que beneficia a todos.

Praia de Mangue Seco, BA, 2007. Na placa, lê-se: "Nós falamos: inglês, francês, italiano, espanhol e brasileiro!".

Figure 5. Extract from the textbook Boulos, *História: Sociedade e Cidadania*, 2018, p. 259.

Final Considerations

This paper intended to problematize the relationship between national history and global history in the context of the Brazilian curriculum reform instituted by the BNCC. Curriculum reforms in the 1980s and 1990s contributed to the inclusion of previously silenced

subjects in the history curriculum. In the clash between the national and the world, however, they kept the history of Brazil subject to exogenous events. The new national curriculum approved in 2017 reinforced, once again, the submission of national history to world history, not only by the selection made, but also by the erasure of the nation's history in the face of globalization.

Our analysis of the curriculum document showed the absence of theoretical references throughout the textbook and, also, of a final list of authors or works consulted for the writing of the final version published in 2017. Likewise, there is no definition of the concepts with which addresses the global versus national relationship. At the same time, through the selection of content operated, it reproduces a historical culture in which the nation imagined as sovereign appears only in the Independence processes of countries in different regions, including Brazil, or in the formation of national states.

Regarding the textbook, the model of globalization designed by Boulos (2018) appears as inevitable and the nation is trapped in the past as if it were not part of the 21st century. In the text dealing with Brazil, it is limited to mentioning the institutional spaces to which the country sought to add itself, leaving out the recent trajectory of Brazilian foreign policy. Symptomatic of this selection is the silencing of the national clash against the ALCA until the total defeat of its realization. In the session that thematizes Globalization, in six pages there are only two sentences referring to the imposition of fiscal adjustment policies on poor or developing nations.

In the two chapters we have analyzed, there is no presence of national states debating with economic blocs or even in conflict of interests with other States. When he lists the arguments in favor of globalization, he reinforces the ideological line that seeks to align technological progress with the merit of the capitalist production system. At the same time, it reinforces the false argument that integration via world trade and information and communication technologies affects everyone at the same time, disregarding class, gender, and race relations, as well as the internal dynamics of nations and the relationship between state and society.

In both documents, there was a trend, already noted by Bittencout (2003; 2009) regarding the curricular reforms of the 1980s and 1990s of the submission of the national versus global relationship to the logic concerned with the integration of the individual into the

globalized capitalist system. By this logic, the notion of nation-state is neglected in favor of a supposed global integration under equal conditions to all countries and continents in the context of globalization.

The History curriculum instituted by the BNCC of Elementary Education once again supported a teaching of History based on the history of Brazil. At least until the next curriculum reform, which challenges teachers and researchers to think of ways to overcome this dichotomy between national history versus world history. However, while a new cycle does not open, we can take as a starting point the reflections of Bittencourt (2003) of an "inverse Integrated history", in which national history would constitute most of the topics and chapters, based on the national problem and the conception of the political and economic position that the country occupies in the era of globalization. Moreover, this centrality in the history of Brazil must originate from the contextual production of the curriculum, starting from current problems and considering the most diverse situations experienced by students. In this way, it would be possible to "establish the significant objects of study that will order the contents to be worked on" (Bittencourt, 2003, p. 201). Such an attitude implies understanding that the history of Brazil is constituted, beyond the global, by the local, regional and national dimensions. The thematic selection, therefore, would stick to a space-time conception that would correspond to the need for a study centered on the history of Brazil.

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19.
History Textbooks and Their Uses
in Indigenous Schools of Baixo Tapajós
in the Brazilian Amazon

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ABSTRACT

The research aims to analyze different forms of using history textbooks in three indigenous schools located in Baixo Tapajós, in the state of Pará, in the Brazilian Amazon. history textbooks for use in public schools are distributed nationally by the National Textbook Program (PNLD). Some research questions were formulated: Which textbooks are used in indigenous schools? How were indigenous matters included in these books? How is it worked by teachers in these schools? The starting point was the hypothesis that textbooks do not limit the teaching of History in terms of establishing dialogues between traditionally selected knowledge and local/regional indigenous cultures. Methodologically, the research was supported by the perspective of educational ethnography. The results show that there are improvements in the textbooks regarding the presentation of indigenous matters, although stereotyped images are still found, as well as gaps in the historicity of the presence of these populations, mentioned only in some moments of the Brazilian history. The teachers interviewed recognized the presence/absence of indigenous matters in the textbooks used and described ways of using history textbooks beyond the content addressed by the authors, highlighting the relationships that were established with the reality of the communities.

KEYWORDS: *History textbooks; Indigenous schools; Brazilian Amazon.*

Introduction

The present research focuses on the use of the history textbook in a particular situation: primary school classrooms in indigenous villages of the Tapajós/Arapiuns ethno-educational territory, State of Pará, Amazon, Brazil. Indigenous schools use the textbooks distrib-

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uted by the National Program for Textbooks and Teaching Materials (PNLD), acquired by the Federal Government and chosen by teachers from among those approved for use in schools all over the country, whether urban, rural or indigenous schools.

The starting point for the elaboration of a research question is the existence of specific legislations in the Brazilian educational field that regulate Indigenous School Education, especially the Decree No 6.861/2009, Law 11.645/2008, National Curricular References for Indigenous Schools and the PNLD documents.

Based on this legislative framework, the research question relates to the tensions and conflicts arising from, on the one hand, the presence in the villages of materials produced for a national program regulated by the State, and on the other hand, the cultural knowledge of the communities or groups on, among others, education, teaching, learning and history.

The aim was to understand the ways in which textbooks are included in the daily routine of History classes in indigenous schools. From the perspective of the school and History teaching as a social construction, the research is guided by the intention to understand how the regulations, norms, guidelines and materials are accepted by the teachers.

The focus on the forms of using textbooks in school cultures allows for a re-reading of this cultural object in the daily life of schools, as a product of the relations between subjects and social structures. The following objectives were established: to verify the presence of history textbooks in use in the locality; to analyze the content of the textbooks as to elements about the history and culture of the indigenous peoples; to identify and analyze procedures used by the indigenous teachers in the use of the books distributed by the PNLD in classes in indigenous school education.

For the purposes of this contribution, the results of empirical work carried out remotely during the coronavirus pandemic (Covid-19), due to social isolation, were selected.

Theoretical Framework

The valorization of textbooks as "an essential source for the knowledge of the codes that define the world of education in its prac-

tical, discursive and sociopolitical dimensions", in different spheres of research and educational practices, led Escolano (2006) to propose a new intellectual field of educational research, Manualistics. Initially ascribed specifically to History of Education, this new field opened to all disciplines studying books that circulate in school cultures.

In the Brazilian case, the existence of the PNLD has been pointed out by Garcia (2011) as one of the elements that decisively contributed to the valorization of the textbook as an object of investigation. For the author, the debate on textbooks becomes "a political and educational issue of the utmost relevance", and the PNLD has induced studies in this thematic field (Garcia, 2011, p. 361).

The history textbooks have been studied in several perspectives; however, there are still few studies that focus on their uses and there is also a lack of research on indigenous schools. Therefore, this research brings contributions to the field of Education and History teaching regarding a little addressed theme, electing as object the textbooks and their uses in the indigenous school classes in the Tapajós/Arapiuns Ethnoeducational Territory, Baixo Amazonas.

From the theoretical point of view, the discussion dialogues with the contributions of Choppin (2004, p. 554) by stating that the textbook should be understood beyond a physical object, "as a product manufactured, marketed, distributed or even as a utensil conceived according to certain uses, consumed – and evaluated – in a certain context". Thus, the research intended not only to analyze the information present in the materiality of the book, one of the most frequent approaches, but to privilege the uses in the classes. For Molina (2016, p. 230), "analyze only its ideology or the lags of the contents regarding the academic production would be to empty it of its contradictions in its production, context, circulation and appropriation".

In this perspective, this research considers the indigenous protagonism in history, "from backstage to the stage", as Almeida (2010, p. 22) points out when discussing the place of Indians in the history of Brazil. For the author, the indigenous are not "passive victims of cultural impositions that only bring them harm"; they "are active agents of these processes". They "incorporate elements of Western culture, giving them their own meanings and using them to obtain possible gains in the new situations in which they live". Among these elements, we highlight the school which is claimed by many indigenous villages in contemporary times.

Textbooks deserve attention from researchers for the different functions they perform: as a pedagogical tool; as a support of truths; as vectors of a value system, an ideology and a culture. Every textbook is historically and geographically determined; therefore, it is the product of a social group at a determined time (Choppin, 2000, p. 116), a relevant concept to investigate the circulation of history textbooks in public schools, specifically in indigenous schools in the Brazilian Amazon.

In Brazil, the production and circulation of textbooks are regulated by the PNLD, they obey a set of rules provided for in the educational legislation and they are produced for the whole country. In this context, the theme is marked by debates and questions related to the knowledge about indigenous people and about the indigenous knowledge present in the history textbooks, which have undergone transformations regarding the contents of indigenous and African history and culture, by legal force, since the law 11.645/2008. However, despite the progress made, the books do not fully meet the criteria of the edicts regarding the recognition of different cultural experiences; and the texts and images present problems regarding the understanding of African and indigenous cultures in relation to Brazilian culture, ignoring the cultural diversity of these groups and presenting a stereotypical view of them (Garcia, 2011, p. 365).

Thus, the objective of the study was to understand the uses of history textbooks in specific situations of school work in indigenous schools in Baixo Tapajós, taking into account indigenous school education in Brazil, a modality which differs from traditional indigenous education. Luciano (2006, p. 129) differentiates indigenous education from indigenous school education: the former refers to the indigenous peoples' own processes of transmission and production of knowledge, and the latter refers to the processes of transmission and production of non-indigenous and indigenous knowledge by means of the school, an institution proper of the colonizing peoples.

Indigenous school education refers to the school appropriated by the indigenous peoples to reinforce their sociocultural projects and open ways to access other universal knowledge, necessary and desirable, in order to contribute with the capacity to respond to the new demands generated from the contact with the global society (Luciano, 2006, p. 129). It stands out, then, the ambiguous and apparently contradictory role played by the school: it favors and accelerates the loss

of the previous culture, replaced by a school knowledge created by non-indigenous people, but on the other hand it may also serve to expand their cultural forms of communication, especially in bilingual education (Bittencourt, 1994, p. 106).

Despite the absence of indigenous people in several moments of the narrated history, there is a certain tradition of treatment of the theme in History teaching, with the introduction of indigenous populations when approaching the history of Brazil or the history of America in the Modern Age, especially in the phase called Colonization. However, in the periods following the establishment of the National State, the indigenous populations gradually disappeared from the scene. Therefore, the indigenous theme in history textbooks is still a challenge for teachers, for didactic production, for evaluators and for researchers.

Methodology

The empirical study is part of a broad research on uses of history textbooks in indigenous school cultures, in an ethnographic approach (Rockwell, 2009). Data production was carried out through different strategies such as observation, documentary analysis and interviews. Quantitative surveys were conducted to define the schools, and contact was made with the administration of the local education system and with the villages for the presentation of the research project and by the local indigenous leaders. Documentary analysis was carried out of the specific legislation on Indigenous School Education, the PNLD standards, the village school documents, the textbooks and other materials used.

In this text we focus only on the results of interviews conducted virtually with female history teachers from indigenous schools, due to the security protocols imposed by the Covid-19 pandemic. Agreements made with indigenous leaders regarding the identification or preservation of individual and group identities were observed. The interviews, conducted during the year 2020, were scheduled by WhatsApp with female teachers who work in three different villages and who were willing to collaborate despite the difficulties in access-

ing internet networks. A basic script was prepared and allowed us to collect information on the teachers and their training, on the organization of classes and on the ways in which the participants insert the books into their didactic actions.

Based on the set of data produced, it was possible to problematize the relationship between the PNLD textbooks and, therefore, of national circulation, and the Tapajós/Arapiuns indigenous culture. We also identified paths taken by teachers to resolve issues related to the limits of the presence/absence of the indigenous theme in these materials, as well as the representations that these materials construct with respect to these populations.

Results and Data Discussion

The Covid-19 pandemic imposed transformations in the school daily life, especially by the impossibility of holding face-to-face classes and the organization of emergency remote teaching. For Nicolini and Medeiros (2021, p. 284), "the social distance, (…) became a great challenge, due to the transformations and adaptations required in such a short period of time". The authors point out that, "suddenly, we found ourselves in front of a computer screen, or mobile phone, watching countless transmissions of virtual content". It was necessary to improvise ways of acting, since the digital technologies and the access to networks were not available for all the Brazilian school realities.

In the indigenous schools of Baixo Tapajós it was not possible to hold recorded or online classes, not even by mobile phone, because most students did not have these resources. Although the technologies are present among the Indigenous peoples, there are difficulties in accessing the computer network in daily life for indigenous students, from rural and peripheral areas, as well as for other Brazilian realities, far from urban centres and in geographical regions such as the North of the country. The pandemic has exposed existing inequalities and the lack of public policies to address them.

According to the interviewed female teachers, in order to teach History in the indigenous schools, some written activities were organized with the use of textbooks, a resource that assumed the role of

a source of school knowledge, to which the students resorted for the construction of historical knowledge. The presence of textbooks in the lives of the students made it possible to read, study, research and carry out activities in their own homes. In some situations, reading the textbook replaced the teacher's lessons and took on a leading role in the teaching and learning process. The student or his representative visited the school fortnightly to pick up and deliver the activities proposed by the teachers, which were carried out with the textbook.

To carry out the research, it was also necessary to create ways to access the information and get some approximation with the school practices developed in that period. The collaborating teachers were willing to chat on WhatsApp and send photographs of their planning notebooks (taken with mobile phones) to talk about what they were proposing to students and how they were using the textbooks. From the photographs, remote teaching activities carried out by teacher Joana were analyzed.

The proposed activity with the theme "Time and History" was prepared by her for the students of Year 6 (11/12 years old). In the item Methodology, the teacher recorded "remote class", informing that it would be delivered to the parents a task to be performed and setting the date for the task delivery. To carry out the task, the teacher indicates the resources to be used – the textbook, pen, pencil, eraser and other teaching materials. The teacher defined a sequence of pages to be read and researched by the students, from the Teláris history textbook – 6th Year (Vicentino & Vicentino, 2018), which the school received from PNLD.

The theme "Time and History" could be used to problematize similarities and differences between time in non-indigenous cultures and time for indigenous societies. According to Monteiro (2007, p. 129), working with the categories of similarity and difference allows students to "perceive the diversity of human experience, while building concepts, analysis tools to understand it". In the teacher's planning there is no evidence of discussion related to the indigenous theme on "Time and History", and the book also does not meet this comparative perspective.

However, in other analyzed cases, the teacher actually proposed activities to relate the topic studied in the textbook with the indigenous theme, seeking references in the local reality and in the present time. For example, in the activity on the topics "Slavery of indigenous

peoples" and "Struggles and conquests of indigenous peoples", the teacher did not restrict the discussion to the time frame of the colonial period presented in the textbook, but created space to bring the problem closer to the local reality and to the present time. Through research activities (numbers 5, 6, 7 and 8) she asked the students to verify the presence of different ethnic groups in Baixo Tapajós, suggesting that they talk to their parents and the *cacique* (chief) of the village to gather information about their ethnic group. We chose to present the image from the notebook, even though with the original characteristics of a photograph taken by mobile phone, to highlight the challenges faced by the teacher and also the research during this period.
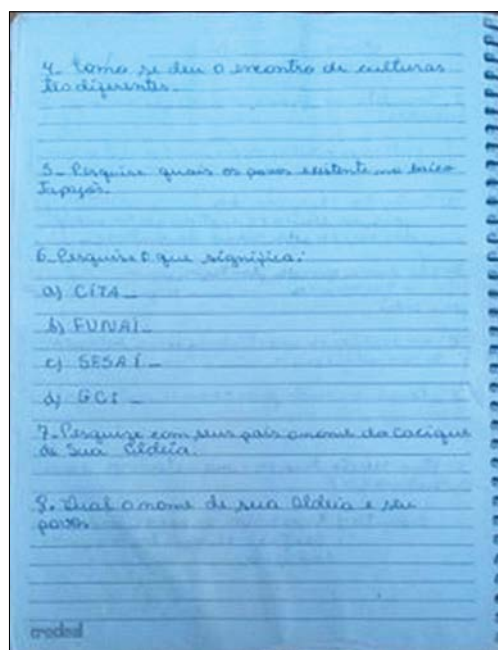
Figure 1. Page from teacher Joana's planning notebook.
Source: Private collection of Professor Joana. Authorized reproduction (2021).

The described activity is in line with the teacher's criticism of the PNLD history textbooks that bear little relation to local history: "In the textbooks we receive they only present the reality of other coun-

tries, other states; nothing is seen of our municipality, and we would like to see it", said teacher Joana. The absence of a relation between local history and the present time with the reality of the indigenous peoples of Baixo Tapajós, as observed, did not prevent the teacher from developing this approximation with reality, which is fundamental for History teaching to acquire meaning in the life of the students and of the indigenous peoples.

The teacher's way of working does not correspond to the paradigm of technical rationality that attributes to the teacher the function of transmitting knowledge produced by others, as Monteiro (2001, p. 122) points out. For this author, teaching knowledge is built on experience, it is not just "a universal knowledge that is set in curricula or textbooks, to be taught". Joana's work shows that her performance mobilizes knowledge and involves "subjectivities and appropriations" (Monteiro, 2007, p. 13).

The field research brought evidence about the presence, the meaning and the function of the textbooks in remote teaching in indigenous schools, as a fundamental artifact in the construction of the history lesson; but, above all, it allowed an approximation to the forms of use of these material resources, showing that the female teachers present proposals beyond what the books establish as contents to be taught.

As Chartier (1990, p. 26) points out, the appropriation that aims at a social history of interpretations is referred to its fundamental determinations (which are social, institutional, cultural) and inscribed in the specific practices that produce them. The appropriations lead the teachers to go beyond the limits of the textbook, as an object produced by others, and to propose a research activity about the local reality and the present time.

Another activity on the indigenous theme was developed for students of Year 7 (12/13 years old), in which the elements of appropriation of the contents of the textbook and of teaching autonomy are evident. These are history activities on the colonial period, the struggles and conquests of indigenous peoples, slavery and indigenous resistance, subjects present in the history textbooks. When comparing the planning and the questions formulated with the content of the textbook it was observed that this resource was effectively used in the development of the proposed activities. However, the teacher created

new questions and deepened the theme by establishing relations with issues of the present time, in particular opening debates about the extermination of peoples in the past and the permanence of extermination actions in the present.

Recognizing the criticism to the absence of the indigenous theme in history textbooks, pointed out in historiographic and didactic productions as well as by the interviewed teachers, it was verified that there are reading practices that seek to overcome these limits and put into scene other realities absent in the textbooks, reaffirming in the case under study the elaborations of Chartier (1990) regarding the reception of books, their uses and reading.

As alerted by Choppin (2004, p. 553), the textbook is not the only instrument that is part of the education of youth: we must recognize the coexistence (and effective use) within the school universe of teaching and learning instruments that establish with the book relations of competition or complementarity, which necessarily influences in their functions and uses.

Teacher Maria's statement summarizes the different working instruments valued by the indigenous teacher:

> *I really like to explore the student's surroundings, the reality, the issue of the village itself.* (…) The biggest space within the History classes is focused on here [the place], so the working instrument I usually use is conversation… even with the elders, we take the conversation round to school. And also going to the places, the so-called walking class, visiting the places (Maria, 2021. Our emphasis).

Conclusions

The documentary analysis showed advances in the representations of indigenous peoples in textbooks. Nevertheless, some problems still remain, such as the absence of indigenous peoples at specific moments in history, particularly in the time periods closer to the present time. Therefore, the first conclusion is that the evaluations carried out by the PNLD resulted in an improvement in the history textbooks regarding the indigenous theme.

The second point to note is that the teachers showed autonomy in the use of the textbooks in the interviews and in their lesson plans,

the ways in which they perceive problems and gaps that still exist and how they include activities that fill the gaps in the books used; in different ways, the teachers bring the contents closer to the lives of their pupils, the culture of their group and the general problems of the indigenous population in the country.

The use of history books by female teachers in the collaborating indigenous schools demonstrated the creative dynamics of History teaching in everyday school life. It was possible to understand part of the process of using the books distributed by the PNLD in some of the schools in Baixo Tapajós, recording forms of appropriation, invention, adaptation and selection by the teachers of objects created in other spaces – such as the textbooks, curriculum programs, activities and exercises, models of evaluation.

Recognizing the characteristics and limits of what we call "prescribed history lessons" – present in the curricula as well as in the national textbooks, and subject to the controls of different institutions and agents – the relevance and value of the "history lessons (re) constructed" in the daily experiences of the teachers and students of the indigenous schools, marked by elements of local cultures, is highlighted.

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20.
Learning History through Digital Games: Analysis of Students' Productions

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ABSTRACT

The main theme of this research is the use of digital games as a resource for teaching and learning History in school. Technological devices such as smartphones brought young people closer to games, even for economically vulnerable social groups. The research focuses on the possibilities of games produced by students, understanding this process as a challenging resource to stimulate the learning of History. The empirical work was carried out with students in the second year of high school at a public school in the surrounding areas of the city of Curitiba (southern Brazil). Those students do not have formal previous formation in digital game design. The objective was to analyze the processes of game development on the school curricular theme of Enlightenment, observing the students' response to this proposal in two directions: students' autonomy in searching for answers to certain project's challenges, and the history knowledge they incorporated during this process. The students showed interest and involvement in the production of games, and they worked autonomously searching for information and tools for the production of the games. Despite not having previous knowledge regarding the production of digital games, they found ways and resources and carried out the activity properly, presenting the results to their classmates.

KEYWORDS: *History didactics; High school; Production of digital games by students.*

Introduction

In the 21st century, in all spaces of social life, the presence of technologies is hegemonic in all daily activities. This process that is increasingly intense puts into circulation different actions and different tools, especially the so-called digital ones. From the most complex activities to simple everyday actions, the transformations that occur are visible, and very quickly, so we can talk about hyper-technologicalization that demands learning and requires the development of

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skills and abilities to insert in the contemporary world. In Brazil, this scenario is also drawn.

However, it should also be noted that the economic difficulties of many Brazilian families make it difficult or impossible for people to acquire, access and use socially available technological resources. On the other hand, the speed of change of technological processes and products creates conditions of consumption that disadvantage people in a situation of greater social vulnerability, the poorest layers of the population.

This is not only about the purchasing power of more advanced and sophisticated equipment, although this is already a problem in countries with large social inequalities. The conditions to learn how to use products, to understand and set processes in motion that involve technologies should also be highlighted. In addition to making tools available, it is necessary to guarantee learning spaces that enable their use. They are cultural products of contemporary life and, therefore, the right to access them must be guaranteed to all.

Among these spaces, the school has a prominent place. A place of diversity of subjects from different social classes, the school also co-exists with difficulties; however, many teachers and students seek different ways in the school subjects to use technology and its resources for pedagogical work.

In this context, we developed this research, which focuses on the use of digital games as a resource for teaching and learning history curriculum content. Studies on the use of these resources point to the possibilities of them being motivational elements and support materials for the teaching and learning of curricular content that should be assessed (López Gomez, 2017), including in the discipline of History (Pereira & Giacomoni, 2013).

The development of devices such as smartphones has brought young people closer to digital games. Even those groups in more vulnerable economic situations have some access to social networks, computers and, therefore, to games. Thus, despite existing limits, a space has opened up for the presence of games in the classroom.

Beyond the idea of using games in teaching, the research of Garcia and Garcia (2021) presents results of the production of games by high school students of an integrated course to technical training. The experience was conducted in a course of digital games production in a federal technical school, which has physical structure, human re-

sources and working conditions differentiated in relation to high schools that belong to the state education network.

Thus, the intention of the research presented below was to analyze a similar experience of digital games production by young people who study in schools that do not present those conditions propitious to the development of the work.

Theoretical Framework

The research was developed in a public school located in the surrounding area of the city of Curitiba, Paraná (southern Brazil) that has approximately 1100 students coming from several different communities, including neighborhoods far from the central area of the city and economically belonging to the middle and lower classes. Those students' parents or guardians represent a wide range of different professions, different qualifications, and several levels of education. A representative portion of students has precarious conditions of access to internet, equipment such as mobile phones and computers.

The empirical work was developed in History classes, a subject with two weekly classes lasting fifty minutes each, in a 2nd year High School class (students aged 15-16), taught in the remote teaching modality due to the Covid-19 pandemic. Conducting remote classes required great effort from public schools and their teachers, families and students. On the other hand, the situation presented itself as a challenge to the search for other ways of teaching and assessing.

In this context, the research had as focus of analysis the possibilities of digital games production by students who do not have specific training for this. Considering the interest of young people for technologies and games, the proposal was understood as a challenging strategy that could stimulate the learning of history. Thus, theoretical references were used about the game as an element of culture, as "a given element, existing before culture itself, accompanying and marking it from the most distant origins until the stage of civilization in which we find ourselves" (Huizinga, 1998, p. 7).

For the production of games in the specificity of History, the contributions of Pereira and Giacomoni (2013) were used, who insert the game in a field of discontinuity in relation to the usual time

of didactic activities, a space that allows the emergence of learning. For these authors, History lessons should be problematizing and cause doubts, stimulating students to investigate, analyze and produce knowledge.

For the authors, the activities of History teaching should be planned in stages which include three dimensions: ways of thinking, ways of doing and ways of evaluating. These dimensions were used to organize the empirical work of the research, which investigated the possibility of the production of games in the History discipline, by young people who do not have specific technical training to perform this task.

In this sense, it was taken into account that the students' previous knowledge is fundamental for the implementation of the activities (Seffner, 2013). But despite the existing limits among young people regarding the domain of technical tools for the production of games, we accepted the author's idea that "A good activity is one that provokes a certain restlessness that moves the students, that goes beyond the limits of the classroom, that generates criticism and controversy and that allows opposition of opinions" (Seffner, 2013, p. 44).

With these elements, in view of the historical and educational moment experienced due to the pandemic and with support from the chosen theoretical references, the research problem was defined: the possibilities of production of digital games by high school students in unfavourable conditions of network, computer and mobile phone availability. The research sought answers to the following question: in a remote teaching situation, without the physical presence of the teacher, and in the actual conditions of previous knowledge and existing technological resources, do students create conditions to implement a project of digital game production? How do they act?

Methodology

The main objective of the research was to analyze the processes of game development by students, on the historical theme "Enlightenment", using different software and basic programs. The interest was to verify the students' response in relation to two elements: a)

the autonomy in the search for answers for the necessary actions to accomplish the task; b) the historical knowledge that the youngsters incorporated during this process.

The research is identified as collaborative, because the intention was to share with the students the experience of organizing the process in its different stages and provide a didactic experience of elaborating games with different softwares and programs.

To structure the task to be performed and analyzed, the dimensions suggested by Pereira and Giacomoni (2013) were used, which guided the organisation of three stages:

    a) Ways of thinking: the initial stage occurred remotely, using resources made available by the state schools to carry out the classes during the pandemic (Google Classroom). The stage included the discussion of the proposal to check the students' interest and verify their previous knowledge about the historical theme, which would be focused on the production of games. The conditions for carrying out the proposal were discussed, the possible difficulties, the formation of work teams, the forms of communication between the groups and the teacher, in the mediation in remote mode.

    b) Ways of doing it: this stage, also in remote mode, included the activities of organizing the teams, the search for references about game production, the discussion about paths to follow, the elaboration and realization of the project by the students, in teams and with the permanent support of the teacher.

    c) Ways of evaluating: this stage included monitoring and discussing the project at all stages, its particularities and the difficulties faced by the teams; the analysis of the results through a final test of the game produced in relation to the criteria established (the functionality and pedagogical significance of each game); the presentation of the game to a wider audience, remotely.

The stages of the process were observed and analyzed through interviews and by accessing some materials produced by the students: a) written text with researched contents about the Enlightenment and its historical aspects; b) the selection of articles made by the students, links and websites related to the production of games that were accessed by the teams; c) the group meetings (remote) to elaborate the games; d) the presentation of the results to colleagues, remotely.

Results and Data Discussion

The results of the empirical work were analyzed in each of the three stages suggested by Pereira and Giacomoni (2013) and that guided the research since its initial phase: thinking the ideas, problematization and dialogues with students even if remotely; making the production of games in practice, solving the difficulties and facing challenges and limits that arose; and the evaluation of the procedures, the means of sharing the games produced and the exhibition of the production performed.

Next, each session will present the results of the research that accompanied all the actions developed in each of the stages of the didactic experience carried out.

1. On the Ways of Thinking

a) The proposal elaboration stage evidenced the small experience of the groups with digital games. Despite being a frequent leisure activity among young people, not all of them dedicate themselves intensively to it.

b) At the beginning, most of the students had some previous knowledge about the historical content to be studied (Enlightenment), but still in a fragmented way.

c) From the point of view of the use of resources for the elaboration of digital games, none of the teams reported previous experiences of production; in face of this, students expressed the opinion that it would be very difficult, but also challenging. But some students reported initial experience with programming and were willing to share with other colleagues.

c) In this stage the actions and materials needed to start the project were defined. Teams were organized by affinity and by the conditions of working together remotely.

2. About the Ways of Doing

a) In the initial phase, the teacher sent the students books, articles and magazines about experiences with games, making

the materials available on the wall space of the virtual google room (classroom). Links to websites and YouTube videos were also posted with the same purpose. In research, teachers and students also found and mentioned other supporting materials such as the YouTube channel «We make a game» and the website http://wiki.unity3d.com/, as well as websites for creating educational games, such as efuturo.com.br.

b) The students shared information about programming languages and the results of their research on the internet about processes and resources for the production of digital games.

c) For communication among students, a group was created on WhatsApp and Discord: messages, videos, results of the developed activities, difficulties and support requests were shared. Among them we highlight some reports from the teams:

We made a group in the WhatsApp application and divided some tasks, and what difficulties were arising we were asking for help from the members (Team A).
We created a group on WhatsApp and shared ideas through the platform. We used text messages to communicate and exchange ideas about the work (Team B).

In this remote production stage, students had at their disposal for production the following technological tools: mobile phones; the Anydesk software, to share files; Unity, Microsoft Visual Studio Code, Blender, Print 3D, PowerPoint.

d) As a result of this stage, four digital educational games were produced on the theme "Enlightenment". Each team created a name for the game and produced a descriptive text on how they carried out the work and on the pedagogical dimension relating to the teaching and learning of a theme from the school curriculum.

3. On the Modes of Assessment

a) The whole process was monitored remotely not only by the teacher but also by the students. Difficulties and needs were communicated and shared to solve the problems. Difficulties were

recognised and reported by teams and students, some highlighted here:

> The difficulty was that none of the members had knowledge about digital game creation, resulting in the production of a simple game (Team A).
> The difficulty is that I didn't have someone to help all the time, the issue of distance from remote teaching and not being able to have that direct contact with the group of participants (Team B).
> We had problems with deadlines and the use of Blender, which is complex in the application in assembling the codes and associating them and creating their functions within the game, they give a lot of errors; and a lack of time, because it was more than 140 hours to make the first stage (Team C).

In addition to the games produced, each team produced and sent reports with issues related to the process of producing the games (the conversations, the research carried out, the difficulties and the learning achieved).

The games were presented to colleagues in a virtual class on Google Classroom, through Meet and its sharing features. At the end, a video was produced in which the teacher and the students report the stages, the challenges and the learnings during the process.

Discussion and Conclusion

The results showed the students' initiative in creating and sharing, with their peers, what they produced; the students also showed autonomy in solving problems and finding alternatives to solve them, despite all the limits and difficulties they face in relation to internet access conditions and also the quality of the equipment they have.

The materials produced showed that the students deepened the knowledge they already had about the Enlightenment, as it was necessary to carry out research, synthesize results and select contents for the elaboration of the game, its description and public presentation.

Among the results, the following elements are also worth mentioning: the students showed interest and involvement in the production of games; they worked autonomously in the search for

information and tools for the production of games; they showed ability to choose the contents selected for the construction of the game and for its inclusion in the game structure; the final presentation to the school community, in a remote way, evidenced the enlargement of their knowledge about the curricular content of the History discipline.

Reaffirming the characteristics attributed to a good activity by Seffner (2013), it was found that the work proposal caused questions and doubts, mobilized and moved the teams, especially beyond the limits of the classroom and the known didactic methods, and mainly stimulated action in the difficulties, the controversies and the constant challenges presented to the students throughout the process. The photo shows the group of students participating in the research and construction of the games.

Figure 1. Young Project participants in face-to-face meeting after the pandemic. *Source*: Collection of the author (2021).

Finally, it is noteworthy that despite having no previous knowledge about the production of digital games, and under the difficult conditions arising from the material conditions of the groups and the limits imposed by the pandemic, students found ways and resources for the development of the task and performed the activity properly,

presenting the results to their colleagues. Thus, we found answers to the question formulated.

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5.

DISCIPLINARY DIDACTICS – MATHEMATICS

21.
In-Service Mathematics Teachers' Use Schemes Using Problems like an Educational Resource

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ABSTRACT

The research was carried out with 39 mathematics teachers in service in a university context of continuous training. The aim is to describe the use schemes of these 39 teachers when employing, in different situations, "school problems" as resources. The framework of the theory of conceptual fields and the instrumental approach were used to identify the operational invariants of such schemes. The results show a lack of operational invariants that facilitate didactic gestures typical of questioning.

KEYWORDS: *In-service teacher; Mathematics teaching; Educational resources; Use schemes.*

Introduction

The selection of resources is fundamental in the teacher's work because the quality of the mathematical activity developed in their classrooms depends on it. In the traditional teaching – still dominant – knowledge is treated as unquestionable and self-evident when teachers choose an assignment. Questioning knowledge to be taught would be fundamental to enhancing and extending the mathematical activity underlying the selected resources. When teachers interact with didactic materials, first, they need to appropriate these resources, studying and analyzing their didactic-mathematical potential, and then they have to consider how to use them effectively in teaching, according to the goals they want to achieve. Suppose the use of devices away from the traditional teaching paradigm is proposed. In this case, the distance between the usual practices of teachers and the intended

type of teaching is very large, and in a real classroom, it generates difficulties and uncertainties related to this factor of efficacy (Otero, 2021).

For years, we have attempted to integrate into the training of math teachers certain teaching gestures that involve the paradigm of questioning and the functional use of resources such gestures (Otero, 2021). This is a complex and difficult goal to achieve, except on a small scale and in relatively controlled contexts during research. The difficulties arise partly because these teaching methods are unfamiliar to teachers, who do not consider them part of the system of instruments they use.

The problem of the professional training of teachers is addressed by the field of professional didactics (Pastré *et al.*, 2006) and the instrumental approach (Rabardel, 1995), which considers the teacher's work as an instrumental activity that uses material or symbolic instruments. This work aims to investigate the use schemes of secondary-level mathematics teachers, from the identification, description, and analysis of the operational invariants that emerge when they use certain resources during a vocational training course in Mathematics didactics, in which the teaching of Mathematics is promoted from the paradigm of questioning. In our case, the operational invariants are the professional beliefs of the subjects, put into action. Therefore, and following Vergnaud (2013), the access, necessarily indirect, to the schemes of a subject, is made by identifying the operative invariants that they contain.

Theoretical Framework

The instrumental approach (Rabardel, 1995) studies how a subject in a work situation transforms a material or symbolic artifact into an instrument, built from that artifact. The processes involved in this progressive transformation determine the Instrumental Genesis (Ibid.). An instrument is defined as a mixed unit related to the subject and the artifact, that is, it has a material component – which is the artifact or a part of it – and a cognitive component: the schemes of use of the said artifact. In the genesis of an instrument two differentiated processes occur: instrumentalization refers to how the subject assimilates and customizes the use of the artifact in a given training or work situation, from the schemes that he already possesses. The instrumen-

tation, on the other hand, occurs when the subject restructures his action from the artifact to carry out the task in question, modifying his schemes.

The concept of the scheme cannot exist without the concept of operational invariant (Pastré *et al.*, 2006). Such invariants are constructed by the subject in its confrontation with the real and are instruments of thought that allow human beings to adapt to the world and make it understandable to them. Its primary function is to guide action and accurately diagnose the situation, which in turn guides the selection of relevant information for this diagnosis. The function of collecting information is carried out through the concepts in action, which can be implicit or explicit but which are fundamentally organizing concepts of the action. They retain from the situation to which the subject must adapt, the objects, the properties, and the relations that will allow this adaptation. Theorems in action express these characteristics in the form of propositions, considered true by the subject. This dimension of conceptualization, present in the "heart" of the schemes, is what distinguishes them from simple habits (Pastré *et al.*, 2006; Vergnaud, 2013).

The operational invariants associated with the schemes of use of a resource designate all the knowledge in action that can intervene in the work of teachers. In any profession, including teaching, work situations are resolved with the assistance of material or non-material tools, which enhance their effectiveness and functionality for the situation, generating knowledge that allows one to decide and act quickly, face changes in a task, and guarantee the teacher productive and viable results. These notions elucidate the development and dynamism of action forms, as well as their stability and potential resistance to change.

Questions

- Which operational invariants of the teachers can be identified in the solutions of the tasks proposed during the course?
- What do the identified operational invariants indicate about the teachers' instruments generated from the proposed resources?

Methodology

The research was carried out in a university course in Mathematics didactics with 39 in-service teachers who have worked between two and fifteen years at secondary school. The course was conducted using the Moodle virtual platform, with one teacher-researcher per twelve students.

Three school math problems were selected, and each teacher participating in the course was randomly assigned one. Considering that problem, they solved the following tasks aimed at studying the problems – knowledge questioning – (1 and 2) and organizing teaching based on the problems (3):

Task 1. Solve the problem in several possible ways,
Task 2. Complete Task 1 and present a general formulation of the problem,
Task 3. Complete Task 2 and identify what could be taught using that resource.

Three math problems (**Table 1**) from the Algebra and Functions curriculum were intentionally chosen because these are the topics that teachers mostly focus on.

Results and Data Discussion

In all the responses to *Task 1*, the teachers "put" the problem in a place in the program, in a specific topic, for a given school year. They solved it by evidencing the mathematical knowledge that, in their place of teachers, they related to that problem: problem A with systems of linear equations in two unknowns, problem B with linear equations in one unknown, and problem C with "algebraic expressions" as an extension of arithmetic. We distinguish here the OI_{11}: "A problem is associated with a (single) theme of the program".

Regarding the solutions, although the task asked to solve the problem in several possible ways, teachers only considered one. Once the problem is related to one content of the program, they seem to assume that there is a pre-established way to solve it and stick to it:

Problem A	Problem B	Problem C
On a farm there are rabbits and swans, in total, there are 550 animals. A careful observer counted 1580 legs. How many rabbits and how many swans are there then?	A man distributed a sum of money among his children as follows: the elder gave him $1000 plus 1/10 of what was left, then the second gave him $2000 plus 1/10 of the remaining, the third gave $3000 plus 1/10 of what was left and so on until the last child. When this was done, each child received the same amount of money. How many children did the man have and how much money did he distribute?	The following designs are built with matches: – How many matches are needed to build Design 6? And to build Design 100? – Is it possible to construct a figure like one of the model having 1500 matches? And with 1822? Could you explain why?

Table 1. School problems presented to teachers

- The answers to problem A were based on the system of equations, which results from sequentially "translating" the statement. This system was solved mainly using the traditional techniques of substitution and equalization, and to a lesser extent, addition and subtraction, determinants, or graphically.
- The solutions to problem B consist of obtaining the equations as a sequential and literal translation of the statement for the first and second children. These equations are equalized and solved to obtain the total amount of money.
- Problem C was solved from a formula obtained as a generalization of the first three or four designs, which relates the number of matches to the order number of the design. This formula was used to calculate the number of matches for a

given design or the order number of the designs for a given number of matches.

In the solutions of the three problems, the OI_{12}: "There is an official school way to solve a problem" is identified since in all the answers analyzed, the teachers opt for the same way of solving, and this allows us to infer that this could be the usual way of solving these problems at school. This solution is based on looking for 'one formula' that arises from sequentially translating the statement instead of relationships expressed mathematically. Hence the OI_{13}: "School math problems are solved by finding a formula from the statement".

In *Task 2*, the teachers had to propose different solutions. They mostly added numerical solutions. In addition, they consider the use of different techniques as new solutions regardless of their scope or similarity to others. For example, in problem A, once the system of equations had been formulated, the novelty lay in using a technique for solving a system of equations different from the one used in Task 1. In problem B, the teachers proposed the same equation, but for consecutive children different from the ones they had proposed before. In problem C, they made transformations in the formula from algebraic operations and considered, for example, f=3n+1, instead of f=4+(n-1)·3, where f is the number of matches and n is the number of designs. In all cases, the teachers treated these supposedly "different" solutions as being independent, or not related mathematically. This supports the OI_{21}: "Each form of solution is independent of the others". Teachers do not analyze the underlying mathematical knowledge or the mathematical activity that the problems may or may not generate except for proposing a formula that arises from sequentially translating the statement. Also, they placed themselves in the situation of using the problem as a resource for teaching, and in this situation, they did not consider it pertinent to analyze possible mathematical links between the proposed solutions. They acted according to the OI_{22}: "It is not necessary to relate the different solutions to each other".

When the teachers had to make a general mathematical formulation for the problem and its solutions, they formulated equations or formulas with fixed parameters according to the statement. For example, in problem A, they fixed the total number of animals and legs

and the number of legs of each type of animal, just as in the original school problem. For problem B, the same thing happened: the initial amount received by the first child and the proportion of the rest (here 1/10) that corresponds to each one remained fixed. In problem C, the number of sides of the original figure was fixed. The teachers carry out some transformations that allow them to write the statements of the three problems as equations that contain the value of the initial parameters and that they are willing to consider as general. This supports OI_{23}: "In a general formulation, the problem's parameters are fixed".

On the other hand, teachers seem to assume that any statement proposed in terms of life-world objects and mathematical operations between them has an "extra-mathematical" character, even if it is meaningless or obsolete. This is compatible with OI_{24}: "Any contextualized statement is an extra-mathematical problem".

Before carrying out Task 3, an online meeting took place to discuss the concepts of variable, parameter, and decontextualization. The aim is that teachers reach a general mathematical formulation that allows them to deepen the analysis of knowledge related to the problem.

Task 3 is linked to the possible didactic uses of the problems. Here, the teachers had to complete the possible solutions, the general mathematical formulation of the problem, and identify which mathematical knowledge could be taught to them at school.

Teachers, to complete the possible solutions, included different representation systems such as graphics, numerical solutions, and, in some cases, the use of information and communication technologies. This was done without questioning the underlying mathematical knowledge. Once again, in all the written productions, an isolated and independent treatment of each proposed solution is observed in accordance with the OI identified in Task 2.

Regarding the use of different representational systems, teachers consider this procedure valuable "per se" since, in most of the written productions on this last task, they highlight the benefits of solving the same problem in different representation systems but without justifying such an affirmation or questioning it mathematically. Teachers do not exploit the new knowledge that this mathematical activity brings with it. Then, we can relate this behavior of the teachers with the OI_{31}:

"Each representation system is a new solution" since for them, these forms of solution have no apparent mathematical relationship.

Considering the general mathematical formulation, most of the teachers formalized the problem, however, although the parameters were not fixed beforehand, they kept the original context: animals, number of legs, offspring, inheritance, and regular polygon. This allows us to identify an operational invariant relative to the types of problems that could be – for these teachers – treated in the school, OI_{32}: "School problems must have a context". On the other hand, although the formalization was achieved, the proposed solutions remained specific and interpreted. Hence the invariant OI_{33}: "School problems must have a numerical solution" because when solving the problem, the teachers again considered the initial parameters and found a unique arithmetic solution.

In this task, the teachers were in the situation of teachers and indicated what they would teach with the resource. Here, they re-related the problem to the program topic, with which they had initially linked it (in Task 1): systems of linear equations with two unknowns, linear equations, and algebraic expressions. However, in their written productions, they did not consider mathematical knowledge but rather the translational aspects with which they associated the problems. The use of expressions such as "modeling of extra-mathematical situations" or "translation from verbal language to algebraic language" is regularly identified. This indicates the invariant OI_{34}: "Textual word problems are appropriate for teaching algebra in school". This shows the habit that teachers have, which consists of 'translating' sentences written in natural language into algebraic symbols (which they often mistakenly call symbolic or algebraic language). This is typical considering that the teaching of school algebra (Bolea *et al.*, 2001) has as its *raison d'être* the replacement of verbal statements by formulas.

In summary, teachers do not study the mathematical problems and associate them with a specific topic in the program. The IOs show that teachers seem to conceive an official and unique way to solve scholarly problems, mainly aimed at finding a formula. They then rule out possible alternative solutions or treat them in isolation. Teachers have had difficulties generalizing problems. They consider the parameters as fixed numbers and look for numerical and unique solutions. Teachers overvalue contextualized problems and underval-

ue intra-mathematical ones. The IOs for each task are synthesized in the following graph:
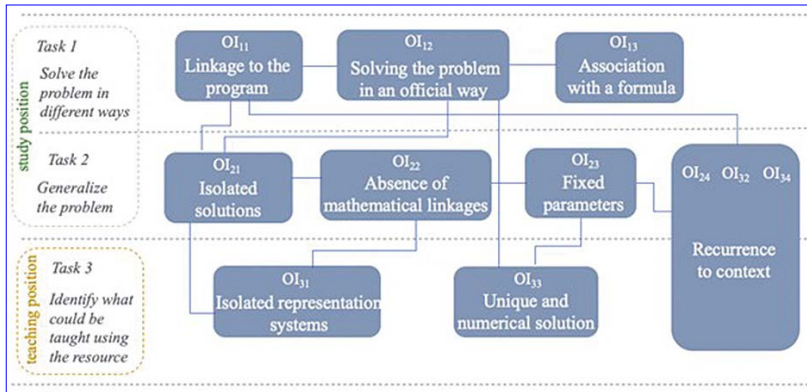
Figure 1. Identified operational invariants.

We emphasize that in the three tasks, the subjects always assumed the role of teacher and used the problem as they usually do, although, by their own decision, they were taking a training course that emphasized the importance of analysis and questioning of school mathematics. The fact that, as a first action, each resource is linked to a program item – considered self-evident and transparent – seems to inhibit any activity of study and questioning. In other words, teachers assimilate the resource with the schemes they have available, which are typical of their habitual teaching. This result is consistent with that expressed by Pastré *et al.* (2006) on the teaching profession. Among other aspects, they emphasize that the schemes explain both the contingent activity and the resistance to change. In this case, the teachers' scheme use of this type of resource originates from a relatively extensive professional experience in the individual dimension and is very consolidated in the community of teachers. The schemes persist because they are efficient for the work, as this is evidenced, for example, by the operational invariants referring to the official way of solving the problem or to unique and arithmetic solutions.

Finally, given the results of this study, we consider that teachers' use of resources should not be interpreted as a lack of mathematical skills that prevents them from studying the problem, generalizing it,

and generating new knowledge from it. Rather, it would be said that they are placed in a work situation in which their students must be able to solve the problem. Then, they subordinate this goal of a lower order to other more relevant ones such as mathematical activity and the knowledge that they could potentially develop with the resource that they have in their hand. For this reason, its operational invariants refer to generating a context, fixing the parameters, reducing the variables, searching for a unique and identifiable solution, isolating and sequentially treating the representation systems as if they were different ways of solving, etc.

Conclusions

Despite the proposed tasks, the teachers do not place themselves in the study position, only in the teaching position. The identified OIs integrate personal schemes strongly conditioned by the dominant scholarly practices. Then, the proposed problems are assimilated by schemes that reduce the mathematical activity and show that studying, investigating, and questioning knowledge is unusual in the teaching activity. The results show the need to extend the research and carry out case studies, for example, with some of these teachers in secondary school classes, to increase the knowledge of their operational invariants and also to consider the instrumental genesis of the students. The importance of carrying out more work in this line is highlighted, particularly in contexts of continuous training that are propitious as a driver of change.

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22.
Mathematics Textbooks for Argentine Secondary School in the Last 80 Years: Knowledge, Arguing and Images

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ABSTRACT

A total of N = 189 secondary school textbooks in Argentina, edited between 1940 and 2021, are analyzed. Based on an inductive categorization, which contemplates three meta-categories of analysis: characteristics of the argumentation (type of argumentation, beginning of the argumentation in each chapter and degree of argumentation or "degree" of conflict produced in the book); characteristics of the images and characteristics of the textbooks (four editorial periods, school year – 12 and 18 years –, mathematical knowledge) the qualitative analysis of the books is carried out. The books selected in the two selected periods are those available at that time, and among the variety of the last two periods, there were those available in high school libraries or those selected by teachers for students. The categorization and validation of these categories was a double-check process. Based on this analysis, the transformations identified in relation to mathematical knowledge, argumentation, and the use of images in textbooks are described, with the aim of answering the research questions: What are the great changes that are identified in the books as a consequence of each educational reform in Argentina? What are the main transformations in textbooks with relation to mathematical knowledge?

KEYWORDS: *Textbooks; Mathematical knowledge; Arguing; Images.*

Introduction

The successive educational reforms in the Argentine secondary school considerably affected the textualization in Mathematics. These reforms produced a complete renovation of the textbooks that affected their mathematical knowledge. When educational reforms are car-

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ried out, transpositive phenomena increase because the reforms are disseminated through changes in curricular designs and the almost complete renewal of school books, to adapt to the new characteristics of educational systems. The successive educational reforms in Argentina, beginning with the one in 1994, and the one that took place between 2006 and 2012, caused changes in the textualization that considerably affected the knowledge to teach, as well as the impact of the Reform of Modern Mathematics that in Argentina generated changes in mathematical knowledges involved in books. We propose to analyze the changes in textualization in the last 80 years, considering the Mathematical traditions (Klimovsky & Boido, 2005) and the praxeology notion (Chevallard, 1999), related to mathematical knowledge; the characteristics of the arguing (Leitão, 2013) linked to the processes of construction and transformation of mathematical knowledge; and the characteristics of the images (Otero, Moreira, & Greca, 2002).

In previous works, we analyzed various characteristics of school books for the secondary level of education, related to modifications about the mathematical knowledge in relation to images, and the traditions of Mathematics linked to the foundation of knowledge and argumentation in mathematics (Llanos & Otero, 2018; Otero & Llanos, 2019; Otero, Moreira, & Greca, 2002). In this paper, we analyze the transformations produced by the latest educational reform, and to explain these changes, it was necessary to redefine the categories of analysis. To define the changes in relation to mathematical knowledge in time the notion of praxeology is considered (Chevallard, 1999). As detailed in the theoretical framework, this allows for an analysis of four minimum components that knowledge should contain: types of tasks and techniques linked to said types, and a technological-theoretical environment for the justification of knowledge. It analyzes to what extent the praxeologies included in the books of the different edition periods contain these elements, and which ones are absent and in which periods. It was also necessary to generate new subcategories, for example for the category named type of argumentation, given that the books' most current editions do not even contain definitions in some cases, only exercises or tasks and this was not possible to be defined with the categories generated before, to describe the books of the last reform. The questions that guide the research are: What are the great changes that are identified in the books as a conse-

quence of each educational reform in Argentina? What are the main transformations in textbooks in relation to mathematical knowledge?

Theoretical Framework

This research adopts an idea of arguing from Leitão (2013) that emphasizes the relevance of the divergences or conflicts between different points of view and the epistemological function of arguing. In this sense, arguing has to be analyzed based on three elements: "argument, argument against and response" in order to generate confrontation between argument and argument against, to achieve construction of knowledge and transformations of perspectives in the subject – response. In that sense, the counterargument is made by an alternative viewpoint or a disagreement with what is proposed in a given textbook. Specifically, here, we are interested to consider the negotiations of the different points of view with ourselves, when we are reading a textbook that allows us to review and to modify our own perspectives. That is to say the focus is on whether a textbook explicitly poses a set of questions that necessarily generates thinking on the side of the reader or if it is only informing. The process of conflict generation with oneself is named by Leitão (2013) as "self-directing arguing".

On the other hand, to analyze the characteristics of knowledge, the Anthropological Theory of Didactic (ATD), and specifically, the theoretical instrument called praxeology (Chevallard, 1999) is used. A praxeology consists of the union of a component of practice or praxis $[T / \tau]$, with another of logos $[\Theta / \theta]$, understood as a discourse on praxis, even when it is very germinal, that describes and justifies a particular exercise. Formally, praxeology is a 4-tuple written $[T / \tau / \Theta / \theta]$ whose components are: a type of tasks T, a technique τ, that is, a way of carrying out tasks of type T, a technology θ, which is "a rational discourse" about the technique τ, which aims to justify it, make it legitimate and intelligible and a theory Θ, which allows generating, legitimizing and justifying a technology θ (Chevallard, 1999). Depending on the characteristics of these elements, a classification relative to the completeness of the praxeology is used in this research, taking into account whether both the elements of the praxis and the

logos are found in books. This allows an analysis of the changes in mathematical knowledge as a consequence of each educational reform in Argentina.

The conceptions of arguing and the praxeology notion mentioned before, the theoretical and methodological orientations for the images and the naive conceptions of teachers about the images proposed by Otero, Moreira and Greca (2002) and the Mathematical traditions are used to develop the categories of analysis which are described as follows.

Methodology

Math textbooks for Secondary School printed between 1940 and 2020 were chosen intentionally. Books were classified according to their date of first edition into four periods, each of them showing substantial changes determined by the Modern Math Reform that took place between 1960 and 1975 as well as the educational reforms: "Rothe plan" 1940 and "Federal law of Education" 1993 reverted later with the "National law of Education" passed in Argentina in 2006. A total of N = 189 textbooks are analyzed from an inductive categorization, which contemplates three meta-categories of analysis: characteristics of the arguing (type of arguing, beginning of the arguing in each chapter and degree of argumentation - that is to say the "degree" of conflict produced in the book, whether due to a question or points of view to be considered by the reader); characteristics of the images and characteristics of the textbooks (four publishing periods, year of schooling – 12 to 18 years old –, mathematical knowledge). A qualitative analysis of the books is carried out, of the transformations identified in relation to mathematical knowledge, arguing and the use of images, generating a first analysis. In addition, the data is also analyzed with multivariate techniques. SPAD® statistical software is used for the analysis.

Regarding the first meta category "characteristics of arguing", the arguing notion of Leitão (2013) is used. Three categories are generated to know about the beginning of arguing, the type of arguing and degree of arguing, being able to identify in this way the intention of the book in relation to the generation of "self-directed" arguing by the reader, or if it is only possible to use the book as a source of informa-

tion or folders to practise. The categories and the subcategories about arguing can be seen in **Table 1**.

A – Characteristics of arguing		
A1 – Beginning of arguing	*Questions*: Textbooks formulating a question or situation.	
	Definition: Textbooks using definitions to introduce knowledge.	
	Examples: Used to introduce content.	
A2 – Type of arguing	*Formal deductive*: Textbooks using deductive mathematics argument more or less formal.	
	Informal deductive: Textbooks using deductive mathematics argument but no so formal.	
	Inductive: Textbooks generalizing from the analysis of examples.	
	Lack of argument: Textbooks without mathematics argument, only exercises, tasks.	
A3 – Degree of arguing	*High*: Textbooks that generate explicit differences of views, without any solution in the text.	
	Low: Textbooks that generate explicit cognitive conflicts, which are solved later.	
	Absent: Textbooks that inform, without questioning.	

Table 1. Categories and subcategories about arguing.

To describe the second meta category "Relationship between images and arguing", some methodological and theoretical characteristics are used that were developed in a study carried out about images in physics textbooks for secondary level (Otero, Moreira, & Greca, 2002). This research analyzes the images in relation to arguing, knowledge and the epistemological conceptions of Maths. Three categories are then defined with their corresponding subcategories, and in order to determine which subcategory each book is identified with, the number of images of each type used in the chapter under analysis is counted.

The category "Use of the image" differentiates those images used to facilitate reading comprehension in relation to knowledge from those with an aesthetic purpose. The category "Type of image" differentiates books that use proper mathematical representations from those that use pictorial representations not strictly related to math knowledge. For the category "Grammatical style of images", the idea of Kress and van Leuween (1996) is used, who proposes a grammar

of visual communication based on considering images as structured messages. This allows a classification of images specifically related to math from those showing actions with the objects involved that gives the possibility of narrating an event. The last category of images, Relationship with the real world, differentiates books that use images specifically math related from those looking for a link between these representations and the world we live in. These categories can be seen in Table 2.

B – Relationship between the images and arguing	
B1 – Use of the image	*Ornamental*: Images with a decorative aim, not strictly related to the content.
	Argumentative: Images used as source of information, from which knowledge can be deduced.
B2 – Type of image	*Mathematical representations*: Images linked with mathematical system of representation.
	Non-mathematical representations: Images not related with mathematical content.
B3 – Grammatical style of images	*Conceptual*: Images representing relations and fixed characteristics between represented elements.
	Narrative: Images that allow identifying actions between the objects.
B4 – Relationship with the "real world"	*Naturalist*: Images referring to the empirical world.
	Abstract: Images not referring to the empirical world.

Table 2. Relationship between the images and arguing.

The meta category "Characteristics of textbooks" allows us to describe, on the one hand, the edition period in which the textbooks are grouped, the year of schooling for which they are intended, and in relation to knowledge, the math traditions followed and the completeness of the praxeology of the chapters selected in the analysis.

The category "Date of publishing" contains four periods, determined mainly by the great changes in the Argentine educational system. "Rothe plan", implemented in 1942-1946 in Argentina, proposed a common basic level for teaching and Secondary School, and unified all national, normal, commerce and industrial schools. This structure was maintained for 52 years summarizing the political and pedagog-

ical decisions of the first decades of the 20th century. This plan covers the first two periods for the analysis of textbooks. However, the distinction between Period 1 and 2 is related to the changes in books appearance adopted from 1974 with Modern Maths Reform and the boom of the Didactic Situation Theory (DST) by Brousseau (1998). Period 3 includes books since the year 1994, as in 1993 the "Federal law of Education" was passed, establishing a primary school – named Basic General Education – that lasted 9 years divided into three cycles (BGE1 from 1st to 3rd year, BGE2 from 4th to 6th year and BGE3 from 7th to 9th year) and the previous secondary school which lasted 5 years was shortened to 3 years and named Polimodal. As a consequence of the reform, secondary school textbooks were completely replaced. In 2006 a new National Education Law was sanctioned that took a step back from the previous law producing changes that affected the textualization. The books of this last reform correspond to Period 4.

In relation to the changes produced by the educational reforms, the variable "educational level" is divided into three parts, according to the ages of the students to whom the books are directed between what is now known as basic and higher education of the secondary school, and the books published for admission to university. On the other hand, the categories "Traditions" and "Praxeology" refer exclusively to the knowledge included in the books. The traditions correspond to categories developed by Klimovsky and Boido (2005), with the aim of classifying the way of conceiving and supporting mathematical knowledge. The category "Praxeology" allows identifying the transformations in relation to techniques, types of tasks, and the level of justification proposed in the books in the different periods if these elements exist. For cases where none of these are identified, the praxeology is said to be incomplete.

The categories and subcategories that describe what is called "textbook characteristics" are summarized in **Table 3**.

C – Characteristics of the textbooks	
C1 – Date of publishing	*Period 1*: Published in the period 1940 through 1973
	Period 2: Published in the period 1974 through 1994.
	Period 3: Published in the period 1995 through 2007 – after first reform.
	Period 4: Published in the period 2008 through 2021 – after second reform.

C2 – Educational level	*Level 1*: Textbooks aiming at students from 12 to 14 years old.
	Level 2: Textbooks aiming at students from 15 to 17 years old.
	Level 3: Textbooks aiming at the transition from Secondary School to university, from 18 years old.
C3 – Traditions	*Computational*: Resolution of problems and calculation using numbers, and the operations done with them.
	Axiomatic: Textbooks that present demonstration steps.
	Structuralist: Textbooks that search regularities that meet the same conditions.
C4 – Praxeology	*Complete*: Precise definitions that relate to each other and to alternative task types and techniques.
	Relatively complete: Precise definitions that relate to each other and to one task type and one technique associated.
	Incomplete: absence of complete definitions and types of tasks and techniques associated.

Table 3. Categories and subcategories defined "textbook characteristics".

From these categories and subcategories of analysis, a first qualitative description of the characteristics of the books, the argumentation and the images is made; which originates a first analysis from which it is possible to describe the great changes in the textualization, according to the successive educational reforms in Argentina.

Textbook Analysis and Discussion

As mentioned before, the analysis of the textbooks carried out in this work completes the research by Llanos and Otero (2018) that analyzes the textbooks in Periods 1, 2 and 3. Then with the last educational reform that begins to take shape in 2006 in Argentina, another massive renewal of textbooks for Secondary School takes place, and consequently the categorization requires including new categories and subcategories of analysis. Among these, the praxeology category is included, which comes to give answers to the changes in relation to knowledge that are identified above all in the last period. It was also necessary to generate a subcategory related to the "Type of argumentation" that describes the books in which no type of foundation or

justification of knowledge is identified, because in some cases there are not even definitions, only activity folders, lists of exercises to solve and complete the book. To better define these differences between the different periods regarding the type of argumentation and the changes linked to knowledge, we select the praxeologies parabola and the quadratic function as cases.

The books of *Period 1* published between 1940 and 1973 are characterized by being informative books; they contain definitions, proofs and are characterized by the axiomatic tradition (axioms, theorems, hypothesis, thesis, proofs, corollaries, and application exercises). Praxeologies are fully presented, with alternative techniques to a task type and also a prominent justification environment. For example, in relation to parable praxeology, in this period the genres construct, demonstrate, analyze, prove, calculate and solve are identified. The types of tasks are varied and include constructing a parabola, obtaining its equation and graphing the function (given the formula for example), calculating notable parameters and points (vertex, axis of symmetry, foci, directrix), analyzing the parameter variations, solving quadratic equations (analytically and graphically). Each type of tasks has different techniques associated with it, and everything is validated mathematically. In relation to the characteristics of the argumentation, the books begin the argumentation with definitions and the type of argumentation is formal deductive. The images are representations of mathematics, conceptual and abstract.

The *Period 2* books, published between 1974 and 1994, are also characterized as informative books, and the praxeologies are presented relatively completely. In these books, there is no longer so much emphasis on axiomatic demonstrations, but rather the justifications are related to the search for structures and regularities, which is why the structuralist tradition characterizes them. Concerning praxeology that we consider as an example, no longer with so much emphasis on the geometric system, but rather the preponderance is placed on the functional study. Praxeology polynomial functions of degree two includes: graph of the function (parabola), equivalent algebraic representations, and quadratic equations. The main genres of tasks that are identified are: graphing, analyzing, observing, and calculating. Different techniques are proposed for each type of task using numbers to graph, that is, table of values, variation of parameters, calculation of the coordinates of notable points. For example, for the

calculation of quadratic equations: use the Baskara technique, use the technique of completing squares, use the common factor technique by groups, use the discriminate analysis technique. Regarding the justification environment the books do not have the structure of the previous period but each component of the block of the justifications is defined and validated mathematically. As part of the demands to the students, they are asked to justify each technique they use to solve the tasks that are proposed in books. Unlike Period 1, the study of the parabola is not found next to the chapter assigned in the books to the locus, since the parable is treated here from a functional point of view. With relation of arguing, the beginning of the arguing is also given by definitions, but in this period also with questions. The type of arguing is deductive but not as formal as in the earlier period. The images continue to be mathematical, conceptual and abstract representations.

Period 3 corresponds to the books published between 1995 and 2007, and a great change is installed that affects the aesthetics of the book and also knowledge. The books stop being informational texts and become exercise folders. They are characterized by the Computational tradition, which is what is of interest are the justifications obtained by numerical results, and the type of argument is inductive, particularly the generalizations about any examples. On the other hand, the praxeologies are presented as incomplete since only one technique is proposed for each knowledge and the justification level is weak. Although the knowledge does not change, the purpose for which the books are proposed and the characteristics of the praxeologies included in them do. Regarding polynomial functions of degree two, knowledge does not change and includes: graph of the function (parabola), equivalent algebraic representations (not treated as such, but defined as separate forms), and quadratic equations. There is a preponderance of a study based on arithmetic techniques and reduction of mathematical writing by alphabetical form. The main genres of tasks that are identified are: observe, identify, indicate, graph. Between the types of tasks, given a polynomial function of degree two, graph it, observe and identify the displacements of the graphs for the different parameters and get an algebraic representation of the function, solve quadratic equations. A single technique is proposed for each type of task. For example, to graph the technique is the table of values; to analyze the transformations in the graphs the technique is to observe.

The justification environment [θ / Θ] in many cases, is replaced by an "explanation" in the alphabetic system, not mathematically validated, for example, the vertex is at the point where it intersects the graph with the axis of symmetry and no questioning such as: Why? How is it calculated? Unlike the previous periods, these books do not make it possible to study but to practice. The characteristics of books changes, the images are mainly used to decorate the book; they are not linked to knowledge.

With the latest reform, the *Period 4* books are finished being constituted as exercise folders to solve. They contain incomplete praxeologies, without justification environment and this is a change that negatively affects knowledge. They are also characterized by the computational tradition because numerical results are sought. The arguing begins with examples or exercises, and in general there are no definitions. The type of arguing is inductive or there is a direct absence of arguing, because they are mostly just folders to complete a numerical result. For example, the definition of the quadratic function in the complete form is proposed, that is to say, in the polynomial form with the parameters *a*, *b*, and *c* different from zero only at the beginning. There is a preponderance of study based on arithmetic techniques and an absence of mathematical writing, which is replaced by alphabetical writing. The main genres of tasks that are identified are: observe, point, indicate, solve, graph; and the typical types of tasks are graph the function given the formula, completing a table of values, mark the vertex and the axis of symmetry given the graph, finding the quadratic equations for the solution of an incomplete equation (*b* or *c* equal to 0), and to a lesser extent for the complete quadratic equation (all non-zero parameters). As in the previous period, a single technique is proposed for each type of task. For example, to graph the technique is to generate a table of values; to analyze the characteristics of the graphs, to calculate the zeros the technique is to "solve for x" (since in this period most of the proposed equations are incomplete) and only in some books the technique is to replace the values of the parameters in Baskara's "formula", etc. The justification environment also disappears in these books, as in Period 3 and in its place, at most an "explanation" is proposed in the alphabetical system; sometimes nothing. These books could be defined as folders of incomplete activities. The characteristics of the images remain as in the previous period.

The great differences identified between the books, are summarized in the following table:

		Period 1 (1940-1973)	Period 2 (1974-1994)	Period 3 (1995-2007)	Period 4 (2008-2021)
		Books that inform	Books that question and inform	Activity folders	
Characteristics of arguing	Beginning of arguing	Definitions	Definitions or questions (with the solution and respective definitions)	Examples (and then definition as a generalization of it)	
	Type of arguing	Formal deductive	Informal deductive	Inductive	Inductive or lack of argument
Mathematical characteristics of books	Traditions	Axiomatic	Structuralist	Computational	
	Praxeology	Complete	Relatively complete	Incomplete	
Relationship between the images and arguing	Use of the image	Argumentative		Ornamental	
	Type of image	Mathematical representations		Non-mathematical representations	

Table 4. Summary of the differences.

– In relation to the argumentation, the explicit divergences of points of view that some texts promote, differ from those books that only inform the reader. Among the books that do not explicitly promote alternative points of view, those that have the function of informing – definitions, demonstrations, examples, activities – are identified (Periods 1 and 2) as well as those that only are folders of activities, the latter do not inform, but they do not explicitly generate confrontation linked to knowledge either. In the latter, which correspond to Periods

3 and mainly 4, knowledge is presented in an incomplete way, and based on a single way of carrying out a specific numerical activity without justification. This explains that we went from books to study and practice, to an activity guide not complete.

- The changes in the type of arguing, go from formal deductive to informal deductive and inductive; and in the last period to the lack of argumentation. In some cases, there are not even definitions. The absence of some level of justification of a mathematical type, linked to the elimination of definitions by examples, is one of the concerns that are identified with the replacement of books by each educational reform. The list of praxeologies does not change considerably; if the level of justification and the deepening that is suggested for the study of the same.

- The different praxeologies appear in the textbooks in a reduced form. Thus, in the books of the last two periods, the elements of the theoretical technological environment are practically non-existent. And the techniques to solve a type of tasks are usually unique.

- Regarding the characteristics of the images, the ornamental use of the external images as opposed to the argumentative use appears mainly in the last two periods. The images typical of the discipline, such as graphic representations, do not disappear, but the decorative use of others not linked to the knowledge, that they would obey the aesthetics of the book is increased.

Conclusions

Over time, books go from being information systems to exercise folders. In the books of the last period, knowledge is distorted. The praxeologies are incomplete, and increasingly removed from their mathematical origins, their uses, and their reason for being. The mathematical argumentation goes from deductive to inductive and current books present lack of arguments. The esthetical and ornamental use of images has increased with time, as well as in quality and in quantity. The goal of most recent textbooks is no longer in-

formative because some do not even contain definitions, only examples and tasks to practice, they are not books to study but activity folders and this explains: the absence of questioning and discussing about knowledge and the loss of meaning of the textbook as an information system. The consequences of this disappearance of the book as an information system are not innocuous, especially if one considers that the traditional teaching paradigm remains intact. This would be possible if teaching were carried out in a paradigm that requires study and research outside of a single book, and where all the information systems available in a class (books, internet, software, etc.) must be questioned, generating the possibility of making them available to build knowledge according to alternative points of view.

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23.
Mathematics Textbooks
in a Multilingual Country: The Case of Algeria

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ABSTRACT

This paper presents the difficulty of learning Mathematics in languages not well mastered by students in a multilingual country (Algeria). These difficulties result from two aspects: the differences between three languages used in Algerian schools and universities (Arabic, Dialect and French) about some logical forms needed to express mathematical thinking, and the lack of teachers' awareness about them and about the related students' difficulties. We propose some ideas and examples for how to improve mathematical textbooks, regarding the cited logical aspects, in order to help students, cope with the related difficulties and enhance their learning by using tasks which call on their language repertoire.

KEYWORDS: *Multilingual country; Different instruction languages; Logical expressions; Mathematical textbooks.*

Introduction

Speaking more than one language or being a polyglot is a big advantage nowadays, multilingualism is becoming a social phenomenon governed by the need of globalization and cultural openness. It is believed that multilingual speakers outnumber monolingual speakers in the world's population. Sayings about the advantages of speaking more than one language are very popular: according to the famous Italian film director Fellini "a different language is a different vision of life", the famous German poet Goethe claims that "those who know nothing about languages know nothing about their own" while the Austrian philosopher Ludwig Wittgenstein, who worked at logic and the philosophy of mathematics, says that "if we spoke a different language we would perceive a somewhat different world". At a personal level, multilingualism creates advantages in terms of cogni-

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tive abilities (including memory). Learning a new language expands the mind and worldview, it opens people up to new cultures and to the fruits of diversity. Moreover, in a globalizing world, knowing a second or third language gives an advantage to career development. At the economic level, multilingualism is good for the economy. Countries, which actively nurture different languages reap a range of rewards, from more successful export to a more flexible manpower. At school level, it can boost students' confidence, enhance academic performances, and contribute to a greater awareness of other languages and cultures in the wider community by reinforcing diversity and inclusion.

This beautiful shining image about the multiple advantages of multilingualism fails and becomes blurry in some other contexts where multilingualism creates problems and difficult challenges. Algeria is an example of such a context, where the different used languages coexist under forces of political, historical, cultural, and sociological domination, and create multiple difficulties to students in the learning of mathematics and sciences.

Mathematics textbooks are written in Arabic in school and in French at the university. The linguistic competences of students either in schools or in universities for both languages have been decreasing during the last twenty years. Many students enter the university with a modest level of French language even though they have been learning this language for ten years (from grade three). An important question raises here: do students who are multilingual not deserve instructional practices that are effective for them instead of practices designed for monolingual learners? In fact, if learners are to be encouraged to use their entire language repertoire when learning mathematics, it is contradictory and maybe confusing for them to rely on textbooks that do not reflect their multilingual background. Textbooks of mathematics written in one language are destined for students as being monolingual, with students and teachers being multilingual, we need different textbooks. How can we improve them to enhance students learning who are monolingual and particularly who have weak mastery of the language of instruction?

Mathematics education in multilingual contexts has been widely investigated in the last decades. Focus moved from dealing with a deficit, to profiting from diversity (Halai & Clarkson, 2016, p. 3). In the latter perspective, this contribution concerns the transition in a

multilingual country from school teaching in one language, to university teaching of Mathematics in another language (code-switching: Adler, 2001), and the related implications for textbooks. In this paper, I will present the linguistic situation in Algeria with the different languages used and the situation in school and in textbooks regarding mathematics. I will also present my research to study and document particular linguistic aspects in relation with mathematical and science thinking. Some suggestions for improving school textbooks are proposed in line with the results of the performed studies.

Algeria as a Multilinguistic Country

Situated in North Africa, Algeria is considered politically as an Arabic country even though it became Arabic little by little after the Arabs' invasion in the seventh century, which is indeed only one invasion among many others. Being in a strategic position, inhabited by Berbers, Algeria has gone through many invasions (like many countries in the Mediterranean area, which were a road and a settlement place for several cultures and civilizations). From Phoenicians to Romans to vandals to Byzantines to Arabs to Spanish to Ottomans to French colonization which ended in 1962. It is important to note that the invaders that had the greatest lasting impact on the culture and on the language have been French and Arabs.

In Algeria, four languages are used by different people and at different levels. The spoken Algerian dialect is spoken by all the population, it is only spoken and not written, it is basically formed by Arabic words, with some words coming from different languages like French, Spanish, Turkish, Italian, and English. The Berber language, which is the autochthons' language, is still spoken by groups of people in all Algeria, and particularly in the Kabylia area (situated in the center north). Arabic language is used for official discourses, for books and newspapers, while French language (the first foreign language), learned from grade three, is very present in the culture and the society: many newspapers and books are in French, in addition there is a radio channel and a TV channel in French.

The Situation in School

The language of instruction in the school has changed through history. During the French colonization period (1830-1962), French was the official language and the language of instruction; after the independence, during the first decade, French continued to be the language of instruction, but during the second decade (in the Seventies), the process of Arabization began to replace French by Arabic in all school levels. By the Eighties, all Algerian schools were teaching in Arabic. This process did not concern the universities, where the scientific and technical sciences (Mathematics, Medicine, Architecture, Computer Sciences…) have been taught in French since independence and are still taught in French nowadays.

The language used for writing mathematics in university is French, including mathematics textbooks; but Arabic and Dialect are also used for explanation and discussion, due to the weak mastery of French language by students. By using Arabic or Dialect, teachers try to help students to better understand the concepts and encourage them to ask questions and share the discussions. However, the three languages have different features concerning the way of expressing logical and conditional thinking and this results in relevant differences (and related difficulties) when students need to express their reasoning.

In 2005, a reform changed the way we write mathematics at the three school levels (primary, low and high secondary): written mathematics formulas are in French (from left to right), mathematical terms and verbal expressions are written in Arabic (from right to left), while discussions (students-teacher and student-student) are supposed to be in Arabic.

Figure 1. The way mathematics is written in the school.

Performed Studies

My research developed through two studies: first, an in-depth comparison of the official languages of instruction in school (Arabic) and at university (French, for Mathematics and Sciences) and of Dialect as concerns those aspects of logical reasoning, which are fundamental in Mathematics and Sciences. Conditional reasoning: for instance, when we say, "if the function is differentiable it will be continuous" or "if it were differentiable it would have been continuous", and negation in mathematics: for instance when we say "all the balls are not red"; or "not all the balls are red".

The second study was based on semi-structured interviews (about 45' each) to a sample of 8 high school mathematics teachers from different schools with different teaching experience and different professional preparation. The aim was to examine the degree of awareness of these teachers about: the differences between the three languages used in the school and in the university, as concerns conditional form, negation, and the articles in mathematics; students' behavior and possible difficulties resulting from these differences and how this would impact students' learning mathematics and an eventual preparation of students and teachers to cope with these difficulties.

Results

For the First Study

Results of the first study showed that:
– Arabic, Dialect and French express important logical aspects in different ways (Azrou, 2020), which results in difficulties for university students.

For the conditional expressions:
– In French (like in English): Actual, possible and not fulfilled conditions are usually expressed with the same conjunctions *si… alors…* (*if… then…*), the difference is with the tense and the mode of the verbs (for a not fulfilled condition: if I *had had the* money, I *would have bought* a car, si j'*avais eu* de l'argent j'*aurais acheté* une voiture).

- In Arabic, there are many conjunctions (for 'if') to express the condition, more than ten: in, inna, idhma, mahma (whatever), kayfama, haythouma, ay, law, lawla, idha, amma, koulama (whatsoever), lamma (when), man (whoever), ma, mata (when), ayyana, anna, ayna (where), aynama (whenever). And different conjunctions for the not fulfilled condition (*law… la…*). In school mathematics, only one conditional form has been conventionally adopted for the possible condition (*idha kana… fa inna…*), to be analogous to the French form (*si… alors…*) 'if the function is differentiable, then it is continuous' ('si la fonction est differentiable, alors elle est continue').
- In Dialect the conjunctions are different, the analogous of 'if' is 'ki' and there is no word for 'then' in the possible condition; while for a not fulfilled condition, the analogous for 'if' is 'lukane' and for 'then', no words or we use 'lukane'. So, we say: 'lukane… (nothing)…', or 'lukane… lukane…'.

For the negation:
- In French, the negation of the verb is formed by 'ne+verb+pas' (example: 'je *ne* mange *pas* de viande' (in English: 'I do not eat meat').
- In Arabic, we negate verbs and nouns; we negate verbs by using 'la' before the verb (la+verb) ('la' is also the opposite of yes in Arabic). We negate a noun or a nominative sentence by using 'laysa' at the beginning. It is important to note that when we negate by 'laysa' a nominative sentence which contains 'all' (like in English when we say: "not all students came today"), the negation is partial (like in mathematics) and when we negate by "la" a verbal sentence, the negation is total (like when we say in English: "all students did not come today").
- In Dialect, it is a little bit different: when we negate, we use a prefix 'ma' attached to the verb followed by a suffix 'esh' (ma+verb+esh: ma+eat+esh means 'I do not eat'). Like in Arabic, we can negate either a nominative sentence (by putting 'mashi' at the beginning of the sentence) or a verbal sentence (by putting 'ma' before the verb followed by 'ush'). For the negation of sentences containing 'all' like for Arabic lan-

guage, the negation of nominative sentences is partial while the negation of verbal sentences is total.

For the Second Study

Results of the second study showed that:

– All teachers showed their *awareness* about students who *do not learn* the multiple conditional forms by expressing a condition and a conclusion derived from it, when learning them in the Arabic language course.

– Most teachers said that possibly *students* are *not aware* about the *equivalence* (or not) between *different conditional forms*, already known in Arabic language, and the equivalence (or not) between these *different expressions and the conventional one*.

– The responses showed that teachers *are not aware* about *students' difficulties in shifting* from one language to another (oral Dialect and written Arabic, written French), which have different logical structures.

– Some teachers insisted on students' *weak mathematical understanding* of the conditional and negation forms, i.e., of how these logical aspects are considered in mathematics (without considering the relevance of students' mastery of linguistic expressions for them).

– Teachers added they *would not use* the conditional form for a not fulfilled condition, because it is *not relevant* for the mathematics they teach. The lack of attention paid to this case *might result* from a style of teaching (very common in high school), which only *aims at the learning of calculations and procedures to be memorized.*

The interviews revealed some other shared, important elements among them, not only teachers' weak awareness of students' difficulties in the transition from high school to university in Mathematics and Sciences is resulting from the logic-structural differences between Arabic and French, but also from the present situation of teaching in school, where Dialect has become the prevailing language for explanations and interaction with/among students, due to their lack of mastery of Arabic, with serious consequences on the level of teaching and learning in high school.

Suggestions for Mathematics Textbooks

A third study, resulting in the proposal of changes in high school and university mathematics textbooks (as tools for teachers and students), was suggested by the results of the previous two studies: not only comparisons between the expressions of logical reasoning in the different languages, but also reflections on both their meanings and the relevance of these in mathematics. This might also contribute to overcoming some university students' difficulties at the meta-mathematical level (Azrou & Khelladi, 2019) and to enhance in-depth learning.

Adding Boxes of Information

To point a concept or a form out to students in the three languages, according to the subject dealt with in that chapter of the textbook:

Examples:
– For a textbook of Calculus (first year at the university).

– For a textbook of high school in the same moment where we introduce for the first time the conventional conditional form 'idhakana... fainna...'.

–   For high school textbook.

–   For a textbook of probability (first year of university).

Exercises of Translation

Systematic exercises of translation into the three languages can be proposed, in order to make students aware about the delicate issues that have been put into evidence in this paper (the linguistic differences) and how to deal with them. The first step might be, in high school, simple translations from Arabic into Dialect (and vice-versa) of sentences like 'If two numbers are negative, then their product is positive', and sentences with other conjunctions different from the conventional one (idhakana… fainna).

Concerning negation,

> How do you negate the following mathematical statements in Arabic and in Dialect?
> – Tous les nombres premiers ne sont pas impairs (All prime numbers are not odd), taking into consideration that 2 is an even prime number.
> – Ce n'est pas toutes les fonctions qui sont bornées (not all functions are bounded).
> – Ces éléments n'appartiennent pas à cet ensemble (these elements do not belong to this set).
> – L'égalité ne peut pas avoir lieu dans ce cas (the equality cannot hold in this case).

Then a further step might be, at the end of high school and at the beginning of the university in STEM disciplines, a translation from Arabic into French (and vice-versa) of the same easy sentences.

The final step might be a reflective activity like the following one (for conditional forms):

> Try to translate (with the corresponding different conditional forms) into Arabic and into Dialect the following French sentences:
> – Si la function est differentiable, elle sera continue (if the function is differentiable, then it will be continuous).
> – Si la fonction était differentiable, elle serait continue (if the function were differentiable, then it would be continuous).
> – Si la function avait été diffentiable, elle aurait été continue (If the function had been differentiable, it would have been continuous).
> How could you describe the different ways of expressing in French, Dialect and Arabic languages these different ways of thinking to a friend of yours, who does not master them well?

In order not only to compare the logical expressions in different languages, but also to understand possible condition, not fulfilled condition and possible to be fulfilled condition, we propose the following texts to be translated.

Translate into Arabic and into Dialect:
'Nadia ne se rappelait pas que si un triangle est isocèle alors il possède deux angles égaux, ainsi elle n'a pas pu résoudre l'exercice et a eu une mauvaise note au test. Si elle avait résolu cet exercice, elle aurait pu avoir une bonne note. (Nadia did not remember that an isosceles triangle has two equal angles, so, she could not solve the exercise and got a bad grade. If she had solved the exercise, she would have had a good grade)'.
'Hassan pense que le produit de deux nombres est positif seulement si les deux nombres sont positifs. Son ami Mohammed voudrait l'aider et lui explique que même si les deux nombres étaient négatifs leur produit serait positif (Hassan thinks that the product of two numbers is positive only if both numbers are positive. His friend Mohammed would like to help him and tells him that even if the two numbers were negative their product would be also positive)'.

Discussion

In Algeria, two different languages of instruction are prescribed for the teaching of Mathematics in school and at the university. These languages are not only different from the present spoken language of the country, but also not well mastered by several students (particularly as concerns their usage in mathematical activities). This situation results in difficulties for mathematics students, particularly at the university level. Suitably adapted mathematics textbooks might play an important role to overcome such difficulties and to increase teachers' awareness about them. In order to propose appropriate changes to present mathematics textbooks, I have performed two studies.

In the first study, I have compared the languages of instruction for mathematics between them and with the commonly spoken language. The comparison put into evidence deep differences concerning aspects of the logical structures of the languages (conditional reasoning, negation), which are relevant for mathematical and scientific activities. The results bring a contribution, related to the specific case of Algeria, in the general perspective presented by Edmonds-Wathen *et*

al. (2016). According to them, differences inherent in the grammatical and syntactic structures of two languages may impact students' mathematical reasoning, when they must switch from one language to another.

The second study (performed through interviews with a representative sample of high school teachers) has revealed a low level of awareness about the differences put into evidence in the first study, and on their possible impact on students' difficulties in Mathematics. These results look important, due to the crucial role of teachers' awareness about the learning problems resulting from multilingual situations in the classrooms (De Mejia & Hélot, 2015).

Taking the results of the two studies into account and given the present situation of Algeria (where the prescribed languages of instruction also concern textbooks), I have proposed and exemplified an adaptation of ordinary mathematics textbooks, to be implemented and tested at different instruction levels. It should consist in inserting information boxes and translation exercises, concerning content-related relevant logic-linguistic differences emerging from the comparison of the different languages. It should provide students (and teachers too) with the opportunity of reflecting and working on them. As such, insertions should contribute to enhancing students' "meta-linguistic awareness", which can be nurtured when they "focus on similarities and differences in their two or three languages" (Cummins, 2007, p. 229). Even if rooted in Algeria, the proposed solution might be adopted also in other countries or situations in which most students (or some of them) have a low level of mastery of the instruction language, provided that differences with the spoken language(s), relevant for mathematical activities, are identified.

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24.
Which Resources for Teaching Informatics? A Case Study in French Elementary Education

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ABSTRACT

The following contribution considers the emergence of computing as a new object of teaching in French primary education and more specifically studies how teachers do succeed in implementing robotic activities with young children. We have led classroom observations for long periods of times and have studied the way the teacher designed, modified and used resources. Our results, which are specific to the situation we observed, show that it is possible to organize, in grade 1, robotic activities integrated in the current flow of teaching. They highlight didactic difficulties stemming from the influence of mathematics resources on the pedagogical choices.

KEYWORDS: *Primary education; Educational resources; Pedagogical robotics.*

Context

In French primary education, informatics has taken different forms over time, both as a series of tools for teaching and learning and as an object of teaching. Concerning this last aspect, experiments on the introduction of the Logo language have been led with some success in the Seventies and the Eighties. In the Nineties official instructions have focused on a different topic: using computers tools in order to favor the learning of writing. Since these tools were supposed to be easy to use, this orientation implied little or no training for teachers (Baron & Drot-Delange, 2015).

The situation began to change in the early 2000s. It is only in 2015 that official instructions have explicitly considered initiation to programming (called "coding"), mainly for children aged 8 and higher,

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and mostly in the realm of mathematics. The focus, as everywhere, has been on pedagogical robotics and, to a lesser extent, on systems like ScratchJr, which has arisen high hopes (Strawhacker, 2017).

This orientation toward "coding" has remained in the national curriculum, albeit on a more modest basis in 2020. Knowing that many teachers had not received any specific training, the availability of pedagogical resources has been crucial. Few textbooks had been produced by publishers to give teachers examples. But there has been a consequent production of resources, mainly online, most of them supported by institutions or by associations.

Working for a national research project (IECARE[3]), we have studied how primary teachers use various resources (both specific to informatics and coming from other fields) in order to teach programming to their students. We will here focus on a particular case study we have led, observing a French teacher using robotics in her classroom during several years. How did she manage to use robots with young children (grade 1 and 3), which resources did she mobilize?

Our observation data have been completed by semi-directive interviews and a confrontation with the results obtained by other researchers within the IECARE project.

Methodological Indications

What we will illustrate here comes from longitudinal participatory research. The teacher with whom we have been working has a strong teaching experience. Before becoming a primary teacher, she has studied science and has a marked interest for pedagogical innovation. We had previously worked with her for a different project (Baron & Voulgre, 2020) and she was interested in participating in this research about programming robots.

A set of robots has been lent to the school by the EDA lab: six Bee-bots and two Thymios. What we concentrate on here is linked with Bee-bots only and mainly drawn from observations in 2021-2022 on a grade 1 class.

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[3] http://iecare.lip6.fr
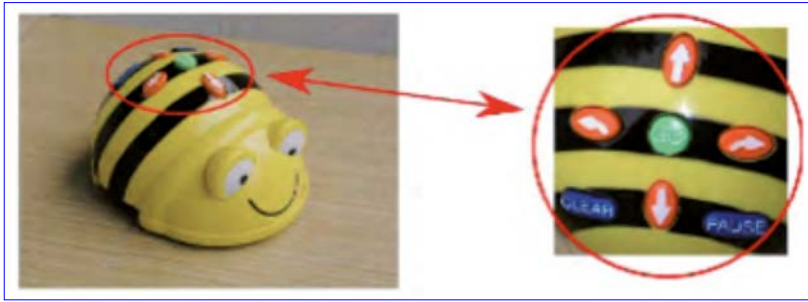
Figure 1. A view of the Bee-bot, with its very simple interface.

These robots are very simple devices, with only five instructions: move *forward* or *backwards* (of its own length), swivel 90° *left* and *right*, *pause* for one second. Up to 50 instructions can be memorized to form a program. A special key (GO) launches the program. So, kids may immediately appreciate what is the result of its execution.

The pedagogical context was pretty good: the teacher's classroom was connected to another room serving as a library, with book shelves, a long table, some chairs and available open space. For each robotic session (50 minutes); the teacher divided her class in two. One half of the students were working autonomously in the classroom with a teaching assistant and the other half solved programming problems in the library in groups of 2 to 3, which had been formed by the teacher.

Figure 2. A view of the library, where students worked with robots and the paper grids.

We started the project in 2019-2020 and kept working until 2021-2022, with an interruption during the pandemic period, when schools were closed for several months in France in 2020. During the year 2020-2021, very strict health measures were taken, limiting the possibility of observation. In 2021-2022, we have come in the classroom once a week at a given time slot during long periods of time (usually 10 weeks in a row).

The teacher has designed her own progression. In the previous year, with older students, she had alternated sessions of discovery and phases of institutionalization in whole class. In grade 1, she only worked with half classes.

Each of us observed different groups of students, collecting pedagogic material and occasionally recording interactions. We chose not to intervene, except when a group of students were obviously blocked while the teacher was busy taking care of other groups. We filled a series of notebooks with the description and analysis of the main events that occurred in each session.

Overall, we have been able to gain a good insight about the dynamics of teaching and learning rudimentary forms of programming in this class. On the other hand, we are conscious that what we saw is very specific and we cannot claim any generality. We'll now present a synthesis of the results we obtained.

Main Observations

About Classroom Organization

Our main finding is perhaps that the teacher has really succeeded in integrating the robotic sessions in her normal course of action. It went overall well; students were interested and there were clear learning outcomes. But this has represented much work and planning, much craftiness and cleverness. She has had to design a scenario and to adapt it periodically according to the students' difficulties. A constancy of her work has been to assign challenging tasks to students and letting them fumble a little before intervening. This has not always been easy. When the task was too difficult and the teacher busy

elsewhere, some students lost their interest and she had to intervene quickly. This has undoubtedly generated a real overload and probably a specific stress for her.

The activities asked from students were varied and corresponded to tasks of increasing difficulties; first, the discovery of the robot functions, then having the robot follow a simple path in a grid, going from an initial case to an arrival one, avoiding obstacles. More sophisticated forms were then organized, like synchronizing the movements of two robots, making use of the PAUSE key (organizing a kind of choreography).

The Teacher Has Created and Used a Variety of Resources

The teacher has used a wide spectrum of "classical" resources: the main one is the opportunity to use an adequate space, where robots could move on quite easily. In grade 1, she has also benefited from the help of a teaching assistant that took care of the students doing autonomous work in the main classroom.

Regarding, more specifically, educational resources, we found that the teacher has selected, transformed and used, a wide range of existing resources but she has also created new resources for particular needs at this level.

First, in order to guide students, she has created a floor carpet with a grid at the dimension of students' feet. Students had to act *as a robot* by following instructions given by another student: this is the game of the "robot child" (Greff, 1998). A few blue or green cells were added to represent a forest or a river that students had to avoid. She later used wood elements (named "kaplas") in order to create paths of various levels of difficulty that robots had to follow without bumping on the walls.

She has also created, with thick paper, grids corresponding to the bee-bot unitary move (cf. **Fig. 2** above), and designed handouts describing the challenge to take up, adapted from challenges she found on internet (cf. **Fig. 3**). Students had to read them and to complete them with arrows corresponding to the robot movement. Regarding the choice of these challenges, the teacher has inserted constraints, like forbidding certain cells, certain instructions or imposing an initial orientation of the robot. The challenge was taken up if the robot moved to the arrival point at the first try.

This is an adaptation for younger students of what she had previously done with grade 3 students who received exercise sheets and had to code but also write short sentences about what they did.
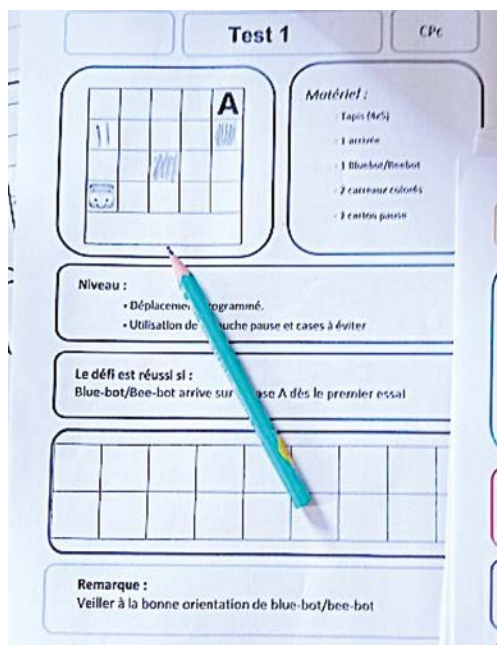
Figure 3. Example of handouts for the students. The small bee-bot, placed on the departure box, is intended to remind students of the importance of orienting the robot.

She has also relied on several regular math textbooks that were deemed pertinent for the development of necessary prerequisites before a "robotic lesson". She focused on specific topics regarding addition, measure, displacement and orientation in the plane and adapted their contents to the situation she had constructed.

Main Didactic Problems

Many didactic difficulties have arisen and some students have for a while kept on making errors for coding a robot trajectory: for young

children, orientation in the plane is a difficult matter and it is hard for them to put themselves in the place of the robot. The main issue is whether they have to adopt a relative or absolute referential.

For example, the figure below shows two possible ways of coding a very simple path from D (departure) to A (arrival) as the following:
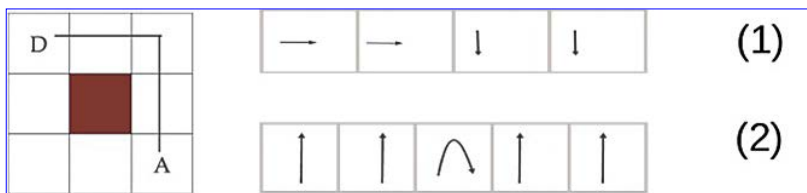
Figure 4. The task is to follow the path from D to A. (1): coding in absolute referential; (2): relative.

The first path uses an absolute referential, using fixed directions (move twice toward the east then twice toward the south). The second one is relative to the robot and actually reflects the instructions that have to be imputed. It is more difficult, for young children, than the first one.

We found that a plausible cause of error was linked to previous work in geometry using textbook instructions. Regarding orientation in the plane, mathematics textbooks propose, according to the curriculum, to study the two notions (absolute and relative referential) and offer exercises that adopt one or the other perspective.

The first year of robotic (2019-2020), with the grade 3 class, the teachers used an old math textbook (by lack of mean). This textbook, edited in 2016, contains no explicit indication about the referential used, and placed exercises based on robot relative coding in the last part. These students were mostly trained to use arrows of absolute direction before coding with robots.

This lack of distinction in the textbooks between those two types of referential has probably caused some confusion in the teacher mind and, henceforth, in students' minds. This obstacle was still present with the grade 1 class, albeit the teachers used a more recent textbook (2018) that mentioned (written in very small characters, in a little corner box) the referential choice.

For example, the following example (Fig. 5) is drawn from the grade 1 mathematics textbook that the teacher used. It shows that

both choices are made in different pages to draw a path in a grid. The left one uses a relative referential, similar to bee-bot displacement and arrows similar to the instruction keys of the robots. The second one uses another choice: circles have to be colorized by students according to the color of the wall the robot is heading to.
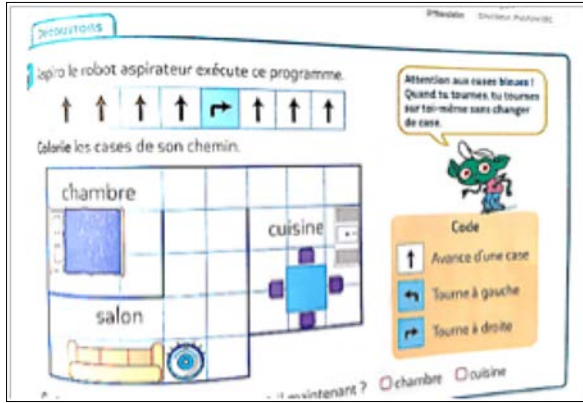
Figure 5. Grade 1, mathematics textbook, coding movement with relative or absolute symbols.

The replacement of arrows by colors corresponding to a wall color, in order to identify the direction to follow, was also confusing.

Specific Problems Linked with Technological Issues

Among common difficulties that were encountered in 2019-2020, some are linked with the technology itself. For example, the robot *does not* move forward a given length but rather a certain *amount*

of time, with its left and right motors synchronized. When, for some reason, the wheels slide, the robot does not behave as it should have (for example, measuring the length of an individual move forward will give different results with different robots located on different supports). Besides, the metaphor of turning right or left is misleading: the robot in fact pivots 90 degrees to the left or to the right (the motor on one side stops, the other keeps on running). Here again, the robot behavior will depend upon the surface on which it is moving. This may open, on the other hand, very interesting opportunities, regarding the discovery of the technological nature of the robot.

With very young children, the teacher has later tried to avoid this problem by ensuring that the robots were moving on the same kind of surface. However, issues have persisted and it has become common practice, when the program was flawless but the robot "bugged" to nudge it gently so that it could reach the goal.

Discussion

The teacher we have observed has succeeded in smoothly "schooling" informatics, integrating it with the other subjects she teaches, and to her regular teaching habits and practices. Undoubtedly, she has much pedagogical experience and talent and a taste for innovation. She adapted herself very well to a new challenge.

According to our observations, the teacher action was heavily sustained both by her experience and by her use of various resources, particularly in Mathematics. Some rather classical didactic problems have been identified, in particular regarding the use of a relative referential, which is necessary for programming the robot. The fact that the textbooks of reference did not establish a sufficiently clear distinction between relative and absolute referential has not been helpful in this respect.

Overall, students have fared rather well and have taken up difficult challenges. For example, as early as in grade 1, they were able to use the PAUSE key in order to synchronize several robots that have to move on a grid without colliding. This ability concurs with other observations made by researchers like Touloupaki (2018) who observed that, with a carefully designed scenario, it was possible to have 5 years

old use, in another programming systems rather sophisticated functions, like sending and receiving messages.

So, such a practice of programming is useful for preparing children for the future. One interesting consideration is that at that age there are no clear gender issues, no menaces of stereotype.

A problem, of course, is that what is possible in a fairly favorable situation is not what can be easily generalized. To what extent this kind of innovation may scale up? One of the main issues at stake is teacher preparation, motivation and the possibility to access educational resources.

So far, initial teacher education in France has not paid much attention to the importance of programming, at best favoring the use of software tools for tasks like writing and reading. Regarding online resources, a huge variety is now available. But their usage probably supposes a sufficient level of awareness of how they could be used and, therefore, some in-service training is needed. Even if in-service training is developed it will take time and before this kind of activity becomes banal, as organizing robotic activities supposes to take some risks that are limited by the help of some community of practice. Now, one of our goals now is to better understand and document how, through the process of resource selection, modification and appropriation, teachers progressively may master the teaching of robotics.

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6.
ACROSS DISCIPLINES

25.
Fostering Critical Thinking in French Middle Schools: Which Conceptions in Science and History Teachers' Resources?

Charlotte Barbier[*]

ABSTRACT

Fostering critical thinking (CT) is usually presented as a goal of education, but what does this mean? To get insights into how CT is understood in the French context, educational resources were examined. This communication addresses the following questions: What types of educational resources on CT have been published? What resources do science and history teachers use and why? What conceptions of CT do these resources convey? Data from a corpus of resources and interviews with middle school teachers were analyzed using qualitative methods. Results show the scarcity of books on this topic and the reliance of science teachers on online resources. They convey a conception of CT as a set of tools to fight irrationality. By contrast history teachers rely on their regular textbooks and conceive CT as a part of the historical method.

KEYWORDS: *Critical thinking; Secondary education; Educational resources.*

Introduction

In most countries, fostering students' critical thinking (CT) is presented as an educational ideal. It is promoted by UNESCO, usually relating to Media and Information Literacy. The OECD considers CT to be a "key skill" that must be developed to meet the current and future challenges of globalized societies (Vincent-Lancrin, 2019). It is highly valued by educators, teachers and researchers and they all seem to agree that we should teach students to think critically (Bailin & Siegel, 2003).

Yet, one can wonder what CT concretely encompasses. Despite substantial scientific literature in English-language about this notion (Lai, 2011), there is not one single definition of CT and various con-

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ceptions of CT coexist within research works (Johnson & Hamby, 2005). Moreover, among teachers, the understanding of this notion can change from one country to another (Howe, 2004) and even from one discipline to another (Kanik, 2010).

In France, this transdisciplinary notion is found throughout school curricula, but it is rarely defined, creating a lack of conceptual clarity (Pallarès, 2020). Regulatory texts and curricula offer very little guidance on how teachers should teach CT and what kind of resources they could use for that. So, what does "critical thinking" refer to in the French educational context? One way to investigate this question is to examine the way CT is presented in educational resources.

Theoretical Framework and Research Questions

In this research, the term "educational resources" refers to both material entities used by teachers during their work and the products designed to be used in an educational setting (Bruillard, 2019; 2021). Puimatto (2014) distinguishes between educational resources based on the intention of their creators. He calls "resources by destination" the productions designed for school uses and therefore generally didacticized. And he calls "resources by opportunity" the ones that teachers use for educational purposes but were not created for schools. Such resources include dictionaries, sound recordings, press articles, and so on. Among the various resources, textbooks usually hold a central place. According Choppin (2005), they can have 4 different functions: a curricular function as they present an interpretation of the curriculum, an instrumental function as they propose activities to make student learn, an ideological/cultural function as they promote a language, values, symbols, and ideas and a documentary function because they contain documents that can be used to teach and learn.

As educational resources on CT can provide insights into how this notion is understood in an education context, we will investigate the following research questions:

– What kind of resources by destination can be found on CT?
– What kind of resources do teachers use to teach CT? Why do they choose them?

– What conceptions of CT do these educational resources convey?

Methodology

The methodology and results presented in this text are part of a broader PhD research project on French middle school teachers' conceptions of CT and use of resources relating to CT.

A corpus of educational resources was built from several databases such as the catalog of the French National Library and major educational publishers' websites. I selected the resources that explicitly referred to CT in their title or keywords. I indexed each resource's title, publisher, date of publication, author(s) and their qualifications, type of document and disciplinary approach. The analysis of this corpus allows us to get an overview of the available resources by destination and compare that to the resources teachers chose to use.

I also conducted semi-structured interviews with 14 middle school teachers: 6 were teaching History & Geography, 8 were teaching Science (Biology & Geology or Physics & Chemistry). They had various profiles as some were novice teachers and others had more than 20 years of experience, some were teaching in rural areas and some in cities. These interviews provided data on their choice of resources to know more about CT and to foster CT in the classroom. Because of the Covid-19 pandemic, the interviews were conducted remotely via videoconference. The interviews were structured thematically, starting with questions on their understanding of the notion of CT, then on their view of CT in middle school followed by questions on their teaching practices. Regarding their knowledge and use of resources I asked the following questions: Have you ever consulted any educational materials dedicated to developing or teaching CT and what did you think of them? Do you use any tools/instruments to develop your students' CT? Do you use textbooks to work on CT? (If so, which ones and how?) Are there any resources you avoid when it comes to fostering student CT?

The data collected were examined using qualitative content analysis (Bardin, 2013).

Results and Discussion

An Overview of Resources by Destination

Searching for educational resources published on CT on the 10 French major publishers' catalogue, one notices no textbook, nor teacher's guide dedicated solely to CT can be found. Some disciplinary textbooks include a few pages and exercises on CT, but they are all designed for high school students and teachers (8 textbooks), not for middle school (0 textbook).

However, other types of books labelled "critical thinking" can be found, mostly published in the last 7 years. There is a whole range of popular science books about CT. Their content convey ideas about what CT is but they cannot be described as resources by destination (Puimatto, 2014) as they are not designed for a teacher or any formal educational setting. 10 books with a clearer educational aim according to their content or title have been published (see **Table 1**).

Number	Translated title	Type of book	Author(s) – qualification
1	A short lecture on intellectual self-defense	essay	N. Baillargeon (researcher in philosophy of education and anarchist activist)
2	Are you a critical thinker? – 30 zetetic activities to sharpen your critical thinking	collection of activities, unspecified target audience	Members of the skeptic non-profit organization CORTECS
3	Handbook of intellectual self-defense	essay	S. Mazet (English teacher)
4	Intellectual self-defence (the comeback)	essay	S. Mazet (English teacher)
5	Fostering critical thinking – Volume 1	collection of activities, from primary school to high school	G. de Vecchi (researcher in education, specialized in science teaching)

6	Fostering critical thinking – Volume 2	collection of activities, from primary school to high school	G. de Vecchi (researcher in education, specialized in science teaching)
7	Scientific thinking, critical thinking – Volume 1	teacher's guide, primary school	E. Pasquinelli (researcher in philosophy), G. Zimmerman (resources creator, former biologist), M. Farina (biology teacher)
8	Scientific thinking, critical thinking – Volume 2	teacher's guide, middle school	E. Pasquinelli (researcher in philosophy), G. Zimmerman (resources creator, former biologist), M. Farina (biology teacher)
9	Critical thinking – Tools and methods for secondary education	teacher's guide for secondary education	secondary school teachers and teachers' trainers
10	Curiosity and critical thinking in children: 45 early learning activities for 0-10-year-olds	collection of activities for children	S. Féret-Hubert (hypnotherapist)

Table 1. List of educational books on CT published in French in the last 20 years.

These resources are scarce and comprise diverse kinds of books: teachers' guides, collections of activities and essays with an educational intent. These books were not published by educational publishers (except no. 9) which is rather surprising. For example, books 7 and 8 come from publishing houses specialized in science popularization. Moreover, these resources do not make explicit connections with the school curricula (9 being the exception).

In terms of disciplinary approach, some do not rely on any identifiable school discipline or scientific field (4, 10), some others present notions and activities from various disciplines in the same book (5, 6). Most of these resources introduce notions of epistemology (1, 2, 3, 4, 6, 7, 8, 9), information about fallacies (1, 2, 3, 4, 7, 8, 9) and notions of

psychology, essentially relating to cognitive biases (2, 3, 7, 8, 9). What is also noticeable about these books is that they usually do not provide a definition of CT and do not explain how their content relates to this notion. It is presented as something obvious, as if for example knowing about cognitive biases and trying to resist them was enough to become a critical thinker.

Thus, despite being rather heterogeneous as far as resource types, author's qualification and target audience are concerned, most of them rely on similar background knowledge and disciplinary approach, and therefore convey the same kind of conception of CT.

Given the scarcity of published resources available to teachers on CT and their weak link to curricula, one may wonder what resources teachers are actually using. Let us now have a look at some results from the interview survey.

Science Teachers' Resources

Surprisingly, none of the 8 science teachers interviewed relied on a textbook or teacher's guide when constructing courses to develop their students' CT. Only three of them mentioned textbooks and this was in a negative way. For some, the non-use of textbooks seems to be related to a lack of content identified as CT in the textbooks. For others, it was more a question of rejecting the textbooks because they conveyed conceptions contrary to the ones they wished to convey in their teaching concerning CT. For example, one biology teacher was very critical of textbooks for his discipline, saying that he found it "pitiful" that the sources of the data and graphs presented in the textbooks were not indicated. In his view, developing CT implies relying on clear and reliable sources of information, therefore this kind of resources are not suitable to him. Another biology teacher, for whom one important aspect of CT is to question our representations and social norms, criticizes the textbooks because in her opinion they disseminate stereotyped representations. For example, she cited the fact that on most diagrams representing the evolution of the human lineage, homo sapiens only have white skin.

Five science teachers stated that they watched science popularization YouTube videos on the theme of CT published on YouTube, in particular scientific skepticism videos, an intellectual and social

movement linked to rationalist activists (Laurens, 2019). These videos are a form of edutainment (Morant & Magalhães, 2021), mixing explanations of scientific notions, advises to be a better critical thinker, anecdotes, thought experiments, sometimes jokes. They are aimed at a wide audience and not designed for teachers, making them a type of resources by opportunity (Puimatto, 2014). They were mostly published during the last 5 years and cite the same literature as the books mentioned previously, some even cite one or two of these books. It is the discovery of these videos that sparked these teachers' interest in CT, not the other way around. They use these videos to educate themselves about CT. For example, one teacher said that it is "mainly through YouTube" that he learns about this subject, and he believes that these videos help him "formalize" what CT is and structure his knowledge on this topic. Some teachers then create their own educational resources based on what they learned in these videos. For example, two science teachers (in Physics and Biology) draw inspiration from skeptic videos on fallacies to produce a web application for their students. The application is a debate simulation where students must identify the fallacies used in the dialogue.

One main conception of CT emerges from these resources, I call it "the sceptic conception of CT". In this view, CT is seen as a set of various "tools" and piece of knowledge such as the knowledge of fallacies, cognitive biases, notions of epistemology and philosophical razors (e.g. Occam's razor). CT is considered to be a means to combat pseudoscience, superstition, and irrational beliefs, in favor of rationality and scientific thinking. This conception can also be found in the resources by destination mentioned above. So, even though most science teachers do not seem to use the books published on CT, they still find other resources online, for free, with similar content.

History Teachers' Resources

Contrary to science teachers, all history teachers use their regular textbooks to teach CT. They use them to find activities and to select documents to be analyzed in class. In this situation, the textbooks are used for both their instrumental function and documentary function (Choppin, 2005).

History teachers also said they use various other documents (pictures, maps, speeches…), usually associated with a set of questions to guide students' reasoning. The pedagogical objective is to think critically about the documents: to analyze them, contextualize them, to examine their author's viewpoint and intentions, to learn about source criticism. No intrinsic conception of CT can be found in these resources, they are not meant to foster CT through their content, but through the way the teachers and students use them.

For the history teachers of this study, CT is seen as part of the historical method, and can be applied to any media. To them, thinking critically means not taking documents, images, texts, and discourses as truth but questioning and analyzing them like a historian would. They think CT is inherent to the teaching of History and do not look for specific resources about CT. This result shows that using specific educational resources to teach CT is not something obvious for teachers, and considering that specific resources should be used is already assuming a particular view on CT.

I call these teachers' view of CT the "scholastic conception of CT". To them, CT is synonymous with mastery of a disciplines' norms, concepts and ways of thinking and then using them to understand the world. In this conception, for a history teacher, thinking critically means thinking like a historian and for a biology teacher it is about thinking like a biologist/scientist. CT is seen as something emerging when students accumulate lots of various disciplinary knowledge and methods.

Conclusion

Fostering students' CT is supposed to be one of the French teacher's missions and even though curricula mention CT a lot, they are quite vague on this issue and do not explain what CT encompasses. The available educational resources were CT mostly published in the last few years. They are still scarce when looking at the books published on this topic, but online resources are easier to find. This shows that in France, CT is not yet really institutionalized but it is becoming a growing concern. The vagueness of the curricula could explain why the main educational publishers did not produce any book on this topic for now.

Educational books about CT published in French are heterogeneous in nature but convey the same kind of conception of CT, seen as a set of tools to combat irrationality. Even though teachers do not seem to use these resources, some science teachers watch YouTube videos that draw on the same content, and therefore convey the same kind of ideas about CT. In turn, these teachers also spread this conception of CT when creating resources for their students drawing on these videos. This raises the question of the validity of their content relating to fostering CT as their creators are not experts on this topic. This also shows that the content of the resources found and used by teachers influences their conception of CT.

It seems also true that teachers' conceptions influence their choice of resources, as shown by the history teachers of this study. The link between teacher's conceptions, their choice of resources and the influence of resources' content on their conceptions appears to be quite complex.

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26.
Teacher's Manuals and Local Culture: The (Un)articulating Role of Educational Public Policies

Edna Luiza de Souza* and Nilson Marcos Dias Garcia**

ABSTRACT

This paper presents the results of a documentary research that aimed to analyze, in the textbooks used by teachers, the relations between the recent national curricular changes and the educational public policies for Countryside Education. The theoretical assumptions were based on the perception that the textbook is a resource that guides teachers in the use of textbooks and that is intertwined with a network of cultural elements of the school and its subjects, as pointed out by Vieira (2018) and Souza (2013; 2019). The teacher's manuals of Science, Mathematics, Geography, Portuguese Language, and History collections chosen and used in rural schools in Paraná, a Brazilian State located in the South of Brazil, were analyzed. We also analyzed the current documents of the National Textbook and Teaching Material Program (PNLD) and the curriculum documents of the educational public policies for Countryside Education. Although the PNLD presents as a criterion for assessing textbooks, their compliance with legal precepts of the current legislations and mentions the Operational Guidelines for Basic Education in rural schools, no collection made mention, in the guidelines for teachers, of theoretical or methodological aspects of these documents. Despite the fact that there was diversity in the choice of collections approved by rural school teachers, based on the possibility present in the Federal Decree 9099, 2017, the State of Paraná opted for adherence to a single material for all schools, indicating a gap between the current recommendations and the attendance to the local reality of rural communities.

KEYWORDS: *Textbooks; Countryside education; Curriculum; PNLD.*

Introduction

As part of the National Textbook and Teaching Material Program (PNLD), a Brazilian program that selects, evaluates, and distributes textbooks to teachers and students in public schools, the teach-

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er's manual is representative in school culture due to its presence in the Brazilian schooling process, since the first years of textbook productions in the country. Several changes have been noted in these materials over the years, influenced by the inconstancies of a society undergoing economic, social, political, and cultural transformation.

From this perspective, these resources, besides contemplating the historical educational trajectory, also present the complexity of values, meanings, and symbols that allow, in a certain way, to recognize the possibilities, weaknesses, and challenges to be considered in discussions about teaching resources present in schools in diverse communities.

Among these local cultures, schools belonging to rural communities are institutions that reflect a whole struggle of several social movements and organizations to think/press for the right to education for peasants or rural workers (Caldart, 2011). Actions, debates, struggles, and mobilizations were carried out for the involvement and integration of specific educational public policies for these realities, in order to provide access, permanence, and the right to quality education to the students in their own communities.

These institutions present their culture through the legislation that regulates their functioning and their purpose in society, embodied in the current curriculum that guides the pedagogical actions. They also present cultural elements that come from the social group where it is inserted, which guide its internal organization and identify the behavior and identity of its subjects.

This paper presents elements of a research that took as its object the guiding documents of the curriculum, the manuals used by the teachers, and current laws on Countryside Education. The resulting analyses contribute to the understanding of the role and the visibility of rural schools in public educational policies as well as the relations of the PNLD stages for the distribution of manuals and their effective use in the classrooms.

Textbooks and Countryside Education

The visibility and recognition of the need for specific policies to address the social and cultural diversities of Brazilian public schools are aspects present in the Federal Constitution of 1988, which states that

education is a right for all and a duty of the State and the family. Thus, the regional specificities of the communities where the schools are located, the need for adaptations, and the distribution of didactic materials to meet the curriculum are, among others, addressed by the various legislations implementing the Constitutional norms on education.

In this particular case, the textbooks, distributed free of charge to all Brazilian public schools, are the main working tool for teachers and students, being used in the most varied classrooms and pedagogical conditions, serving as a mediator between the official proposal of the power expressed in the curricular programs and the knowledge taught by the teacher. Corroborating this idea, Aguiar and Garcia (2017) also point out the role of textbooks as guides between the curriculum standardized by governmental instances and the curriculum implemented by the teacher in their pedagogical action.

With this regard, we highlight the adaptations made by teachers in the use of this resource to meet local specificities and for content learning. In research conducted with rural, indigenous and urban schools, Souza (2013) found the need for adaptation in the use of language and images, as well as in the articulations between the various methodologies proposed for the content learning, in order to contemplate the school subjects in diverse geographical areas. In this sense, thus expresses the researcher:

> Regarding the use of these materials by the teacher it is observed that adaptations are also made that indicate that she, by not using only the textbook that students have, is somehow meeting the expectations and needs of these in relation to the understanding of the content covered (Souza, 2013, p. 102).

Given this picture, the presence of textbooks in culturally distinct communities contributes to the strengthening of their identity, reinforcing their traditions, rituals, means of survival, among other aspects. According to Vieira (2018), in the Brazilian case, the presence of textbooks in school life is related to the existence of the PNLD, "which enables all schools, regardless of where they are located, to benefit from the program – guaranteeing resources under the Federal Government for the presence of these materials in schools".

Regarding Countryside Education, the mobilizations turn to the recognition of these communities and affirm as a public policy at-

tending these specificities in a constant challenge "in the resistance to reaffirm their convictions and continue advancing in their processes of struggle for the education of subjects in the field" (Vieira, 2018).

In so far as the textbook constitutes a teaching resource belonging to the school daily life, which participates in the dynamics of the classroom through its theoretical and methodological interference, in the didactic knowledge to be reproduced and reconstructed and in the cultural relations that occur with those who use it, it is relevant to know it from different temporal and local perspectives.

Problematization/Contextualization

Due to the provisions in the Brazilian Common National Curricular Base (BNCC), a document homologated in 2017, textbooks distributed by the PNLD-2019, underwent several modifications, regulated by the Federal Decree 9099, of 2017, which provides, among other legal aspects, how the stages and models for choosing the PNLD textbooks should be.

In view of these changes and the importance that the suggestions of such manuals can assume in the curricular organization of schools, we developed a documentary research that aimed to analyze how these curricular changes could interfere in the articulation with the local reality of Brazilian rural communities. To this end, we analyzed the Science, Mathematics, Geography, History, and Portuguese Language textbooks used in rural schools in Paraná, a Brazilian State located in the South of Brazil, in an attempt to answer the following questions: How did the choice of the textbooks used in the rural schools occur? How does the teacher's manual articulate the new curricular proposals with the cultural elements of Brazilian rural communities?

Methods and Sample

The empirical research was conducted using as a source the records of the choices of textbooks in 465 rural schools in the State of Paraná-Brazil and by content analysis of the textbooks used by teach-

ers. In addition to this documentary research, we also analyzed Edital 01/2018 – the call for applications for the registration and evaluation process of didactic and literary works for the National Program of Textbooks and Teaching Materials PNLD 2020.

The State of Paraná has more than 540 schools located in the countryside and distributed in 31 Regional Education Centers, which serve the most varied communities. According to the Curricular Guidelines for Countryside Education in Paraná.

> The countryside portrays a sociocultural diversity, which comes from the people who live in it: temporary rural wage earners, squatters, tenants, campers, settlers, resettled people affected by dams, small landowners, rural villagers, forest people, indigenous ethnicities, rural black communities, quilombos, fishermen, river dwellers, and others. Such diversity found in the countryside populations of Paraná indicates a fact that cannot be left aside: the countryside schools will have present in their interior this conflicting, therefore rich, socio-cultural and political diversity (SEED/PR, 2006, p. 27).

The textbooks analyzed refer to those that would be used by teachers in the final years of elementary school, which were approved and chosen through the PNLD 2020 and meet the regulations linked to this edition of the program, such as Edital 01/2018 that indicated, among other things, the model for choosing the collections approved by the Brazilian states.

Among the eight curriculum components available in PNLD 2020 for teachers to choose from, the textbooks for Science, Geography, History, Portuguese Language, and Math were selected for this study.

To collect data on the choice of textbooks by rural schools, we consulted the PNLD platform, which provides several links for public consultation, related to the Program and its various aspects: choices of schools, funding, calls, legislation, statistical data, among others.

Results

The first section presents the analysis of the guiding documents of the PNLD 2020 notice, and the second section presents the results and analysis of the teachers' choices of textbooks.

1. PNLD 2020

The National Textbook and Teaching Material Program (PNLD) comprises a set of actions aimed at the selection, evaluation, and free distribution of teaching, pedagogical, and literary works, among other materials to support educational practice, to students and teachers in public schools of Basic Education in Brazil. Specifically in the Announcement 01/2018, the main evaluation criteria for the books to be chosen by teachers are: compliance with the Federal Constitution, Basic Education legislation, and the skills and abilities defined in the Common National Curricular Base (BNCC). This evaluation consists of a set of common eliminatory criteria and specific criteria, and failure to meet them results in the exclusion of the work for choice in schools.

Among the common eliminatory criteria is the item "respect for legislation, guidelines, and official norms relating to education", listing all the legislation in force, including the Operational Guidelines for Basic Education in Countryside Schools, a document that presents a set of principles and procedures aimed at adapting the institutional project of rural schools and recognizes the identity of rural schools by its link to issues inherent to their reality, "anchored in the temporality and knowledge of the students themselves, in the collective memory that signals futures, in the network of science and technology available in society and in social movements in defense of projects that associate the solutions required by these issues to the social quality of collective life in the country" (Brasil, 2002).

Another aspect pointed out in Edital 01/2018 for PNLD 2020 is the one indicated in Decree No. 9.099/2017, which in its Art. 18 establishes that the choice of didactic material will be given by the State or municipal maintenance network between one material for the school according to the choice of its teachers; one material for each group of schools or a single material for all schools in the network.

2. Choice of Textbooks by Teachers in Rural Schools

The textbooks to be used in public schools for the final years of elementary education, between the years 2020 and 2023, were evaluated

and chosen by teachers through the PNLD 2020 guide from among the textbooks approved by Edital 01/2018 (Fig. 1). There was also the possibility of the analysis of only some of the printed textbooks delivered by the publishers to schools, considering that schools do not always receive them or receive them in a timely manner, as pointed out by Souza (2013; 2019).

Subjects	Number of approved collections
Science	12
Geography	12
History	11
Portuguese Language	6
Mathematics	11

Table 1. Number of collections approved in PNLD 2020 for teachers' choice.

Figures 1, 2, 3, 4, and 5, below, present the results of the collections originally chosen by the teachers, according to their wishes and criteria established throughout their educational trajectory, allied to the recognition of the local reality.
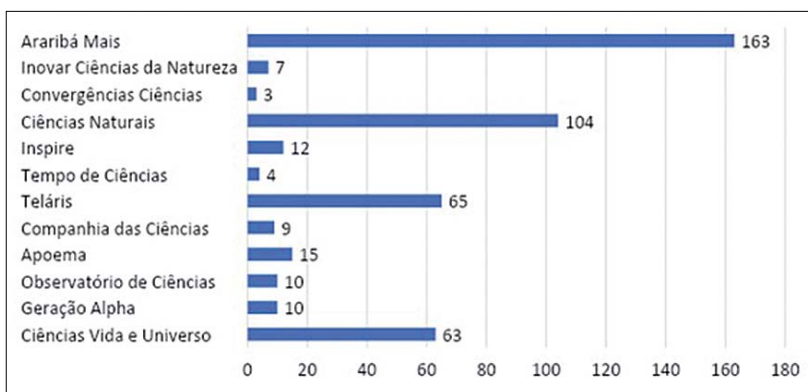
Figure 1. Science teaching collections chosen by teachers in rural schools.
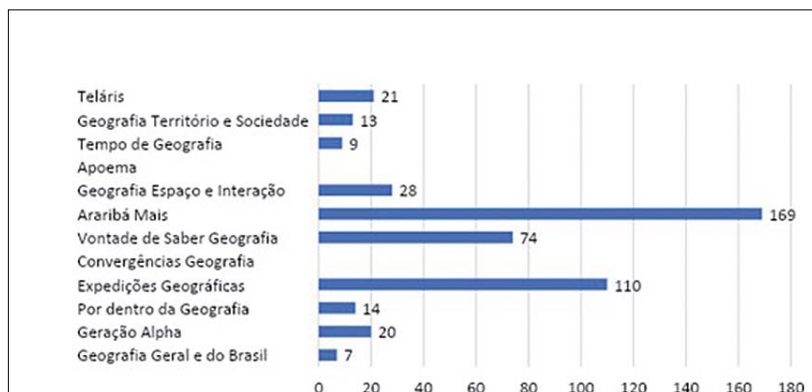
Figure 2. Geography teaching collections chosen by teachers in rural schools.
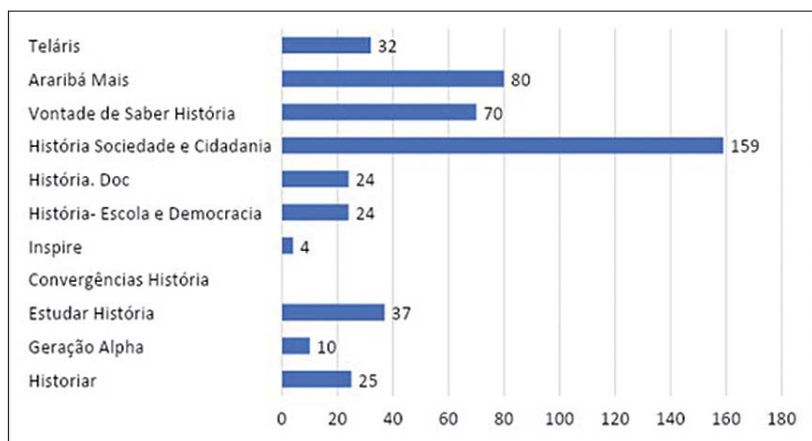
Figure 3. History teaching collections chosen by teachers in rural schools.
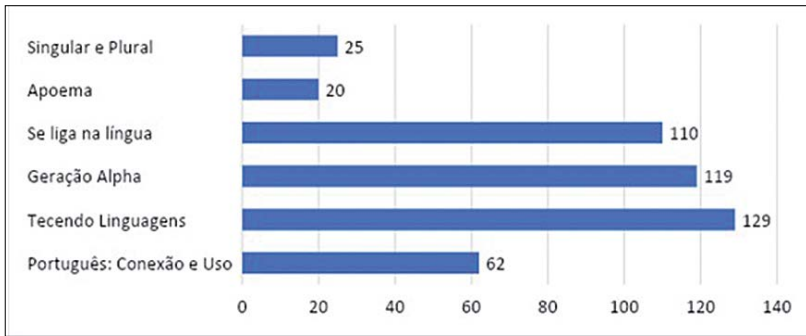
Figure 4. Portuguese Language teaching collections chosen by teachers in rural schools.
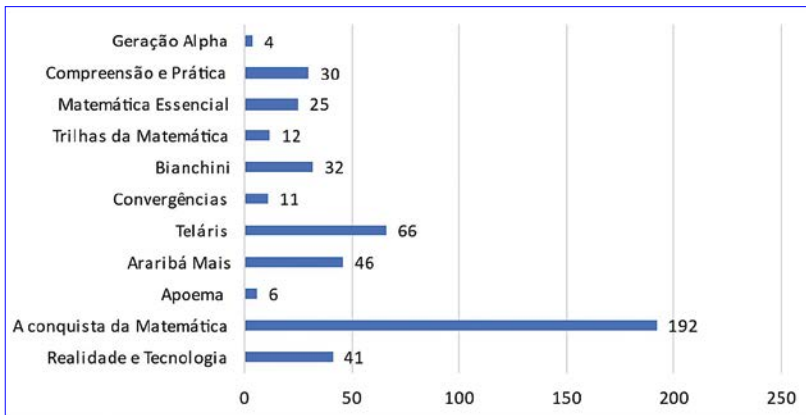
Figure 5. Mathematics teaching collections chosen by teachers in rural schools.

Despite all the analysis and choice processes developed by schools and teachers, the Paraná State Department of Education (SEED), given the possibility presented by Article 18 of Federal Decree No. 9.099 of 2017, opted to adopt a single material for use in all schools, defined by the most chosen teaching work in the State.

Discussions

1. The Single Choice by the State

The significant number of collections approved in PNLD 2020 contributed in some way to several possibilities of analysis and choice of teachers, and only two collections of Geography and one of History were not chosen, indicating the heterogeneity in school communities in relation to the teachers' desires. Among these are the aspects present in these materials such as: the presentation of the contents, the images, the language presented, the scientific texts, among others, or even in the tradition built by their trajectory, which leaves marks and that will be consolidated in the continuity of the teaching work, articulating with their experiences and relationships built in the use of the book. This choice criterion comes both from his experience and from his perception that the tradition in the use of the textbook is important both for his pedagogical action and for the students' effective use of it.

It is noteworthy that in the search for data it was found that the choices covered several collections, even if the schools were located in the same cities, reinforcing the importance of local differences and diversity of interpretation of teachers, who will use this resource in everyday school. Ezpeleta and Rockwell (1989, p. 22) point out that the school is a world of contrasts and its multiple realities and that is why it is necessary to "understand that it is objectively distinct according to the place in which it is experienced" (Ibid.).

It was observed that the most chosen textbooks in rural schools coincide with the predominant choices in urban schools, and that they were, as already indicated, adopted in the State as a whole. It is noticeable, however, that in addition to the collections adopted by the State, others also had significant indications by teachers, especially in the subjects of Portuguese Language, Science, Geography, and History, which draws attention to the fact that they were not considered by the State decision. According to Vieira (2018) it must be recognized that having textbooks produced with a national character, especially in the case of Brazil, with an extensive and diverse territory, is undoubtedly an impossible mission if the goal is to link universal knowledge to different realities, to the local context. In this sense,

by recognizing and respecting the choices of the textbooks for their school communities, this mission could be mitigated in order for the teacher to handle them significantly during the four years of validity of these materials, and consequently in their proper use, making them an efficient teaching resource in their pedagogical action in the classroom.

2. Normative Landmarks of Countryside Education in the Manuals Chosen by the State Network

Brazilian Basic Education in recent years has undergone changes in the approaches and in its curricular organization in all its educational modalities and regional specificities. Through the implementation of the new norms for the elaboration of curricula for Elementary Education in Brazilian schools, the Common National Base (BNCC), approved in 2018, has also impacted the production of the textbooks of PNLD 2020, which changed direction in its theoretical and methodological aspects. Although discussions still persist among researchers and experts in countryside education, about the weaknesses and contradictions of the BNCC for school institutions, the Departments of Education had to develop and organize their curricula based on this document, even in the absence of more effective discussions and training with the school community.

Recognizing these situations, the PNLD 2020 textbooks arrive in the classroom with the new curriculum organizations and, therefore, in addition to guide the teacher in approaching the proposed content to students, they will also contribute to the fulfillment of the BNCC proposals. By analyzing these resources, it was possible to verify the fulfillment, in all approved collections, of the legal aspects of the BNCC and the articulations of the content with the competencies, term used in this document, which refers to the ability to mobilize knowledge, skills, attitudes and values so that they can solve the challenges of everyday life, inside and outside schools. In the textbooks analyzed, these competencies are present in a chapter, covering both general and subject-specific competencies.

On the premise that in all the manuals, in the texts and methodological guidelines to teachers, the guiding elements of the BNCC are

addressed and explained, and therefore comply with the new curriculum legislation, it is important to point out the role of these resources as articulators for teachers in the understanding of educational public policies and their impacts on classroom actions.

However, no collection approved by PNLD 2020 presents throughout its pages references to the guiding documents of Countryside Education or didactic proposals related to this specificity. It is possible to agree, in this aspect, with Medeiros and Menezes (2020), that the BNCC is a relevant curricular policy in the Brazilian Education scenario, having, however, gaps and a misalignment to the actions aligned to the Countryside Education, especially in recent years, given that the absence of the participation of the collective of field subjects is configured as a major limit in its proposal. One must also consider the non-fulfillment of the evaluation criteria of the textbooks regarding the respect and insertion of the Operational Guidelines for Countryside Education in the organization and elaboration of the didactic works.

Final Considerations

The process of building Countryside Education took place in the conceptual field and also in the field of the struggle for policies, so that advances could be possible. In this sense, the inclusion in public policies of the specificities of this kind of education in school curricula becomes fundamental for the fulfillment and strengthening of the realities of peasant communities.

It is noticeable that the BNCC does not intensify or propose discussions about these policies that can articulate with the perspectives of recognition of school specificities, in a process that is linked and interferes in the preparation of teaching materials for daily use by teachers and students that will be present in all school spaces.

In this sense, the State's option to indicate a single material for all schools, regardless of the teachers' choice and the specificities of the school context, disregards the interests and needs arising from the rural, urban, and indigenous communities, as well as those of the teachers who will use the materials.

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27.
The Invisibility of Women in the Media Resources of Brazilian Art Textbooks

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ABSTRACT

The aim of this article is to verify whether there is gender parity in the media resources of textbooks distributed to Brazilian schools through the National Program of Public Textbooks, known as PNLD (Programa Nacional do Livro e do material Didático). Fey (2022) identified the problem of androcentrism through the analysis of the collection Por toda parte *(Ferrari et al., 2015), which motivated us to verify whether reproduction of cultural stereotypes also happens in the repertoires of media resources that accompany these textbooks. With references by Choppin (2004), Forquin (1992), and Bourdieu (2012), our concern has been with the ideological and cultural function of these textbooks and whether the selective tradition of male repertoires is being reproduced in school curricula. Our quantitative analysis of the CDs and websites featured in the textbooks confirmed the reproduction of androcentrism, since 83% of the suggested artists are men. The sub-representation of women in art is historical (Perrot, 2007), but that scenario can be changed if the vast production by women is included in the repertoires of media resources that are comprised in Art textbooks. This is not meant to devalue men artists, but to denaturalize the androcentric habitus in the school environment.*

KEYWORDS: *Art education; Textbooks; School culture; Androcentrism.*

Introduction

The use of media resources in classrooms has become a common practice, indicated especially by textbooks, which are the edited curriculum used by teachers in the school routine. However, these resources tend to reproduce cultural stereotypes, among which we highlight androcentrism in the curriculum. This problem has already

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been identified in Brazilian school textbooks (Fey, 2022; Domingos Filho & Rauen, 2018), and motivated us to analyze whether the lack of gender parity also exists in media resources that accompany textbooks, which have a similar ideological and cultural function.

The media resources that we have chosen for analysis in this work are the CDs and Internet sources indicated in the four books of the collection *Por toda parte* (Ferrari *et al.*, 2015). This collection was distributed through a Brazilian federal government program for public schools, known as PNLD. The books were delivered to more than 5.9 million students between the ages of 10 and 14 and used for teaching art and music between 2017 and 2019.

The aim was to analyze quantitatively and qualitatively the repertoire of audios and websites, to identify if there is a predominance of male artists, provided that the tendency of reproduction of an androcentric *habitus* reinforces this type of behavior. The sociologist Pierre Bourdieu suggests that "the school, responsible for the effective reproduction of all principles of vision and division, […] can, in the long run, no doubt, […] contribute to the progressive disappearance of male domination" (Bourdieu, 2012, p. 139).

This text will initially present a bibliographic review on the historical invisibility of women in art, the reproduction of the androcentric *habitus* and the reproduction of a selective tradition within textbooks. We will then present the results of the quali-quantitative analysis of the media resources proposed by the textbooks and discuss them through bibliographic support. Finally, we offer some proposals to minimize the androcentric bias and strategies for expanding a repertoire with more women's names, so as to remove them from the invisibility in the field of art and music in teaching materials.

The Historical Invisibility of Women and the Selective Curriculum

When we observe their performance in external environments and in public spaces, the invisibility of women in art and music history is not different from what happens in the fields of science, philosophy, education and other areas. For many years, the internal environments were those destined for women due to their biological

role in maternity, so that from a patriarchal stance, they should only devote themselves to household activities and care for their children. The boldest women made a choice between a profession or the tasks of marriage, or else, they wrote, composed, painted, but did not gain visibility, unless they achieved it through the father or husband. The historian Michelle Perrot explains that women are mentioned in narratives and art, but male accounts most often do not acknowledge them as artists and composers: "Painting, composing music, pushing the boundaries of entertainment arts, […] it wasn't simple for them" (Perrot, 2007, p. 101).

This kind of muffling of women artists and composers is named by the French sociologist Pierre Bourdieu as a symbolic violence. They suffered the consequences of a sociological behavior that penetrated people's unconscious, an androcentric *habitus* developed and reproduced for a long time:

> The feminist movement has contributed greatly to a considerable expansion of the political or politicized area, making it into the sphere of politically debatable or contestable objects and concerns removed or ignored by the political tradition, because they seem to belong to the order of the private; […] are linked to the structures of the male and also female unconscious, contribute strongly to the perpetuation of social relations of domination between the sexes (Bourdieu, 2012, p. 138).

Changes in the behavior of society regarding the valorization of women in the field of art has been happening, with the inclusion of repertoires of female composers in concerts, space for the women conductors ahead of the conducting of orchestras, painters and artists being included in exhibitions of museums and other public spaces, valorization of playwrights, dancers, and choreographers leading shows. However, a space that prompts great concern about the reproduction of androcentrism is the school curriculum, which directly impacts the new generations and could promote the denaturalization of the sexist and male-centered cultural heritage, instead of fostering it.

The school space is a place in which, in addition to human circulation, power relations are fought through the transmission of knowledge. Jean Claude Forquin sums up this concept well by stating that

> The school is not only a place where human flows circulate, where material wealth is invested and generated, where social interactions and

power relations are fought; it is also a place – the place par excellence in modern societies – of knowledge and symbol management and transmission (Forquin, 1992, p. 28).

The contents to be taught are the result of a selection within the school culture. It is in the curricula that we find the institutionalized form of this selection. The textbook, in turn, is taken as part of the curriculum, and is also drawn up from a selection to preserve and convey a cultural heritage. The author, however, in view of this finding, warns that "it must be readily accepted that this reproduction takes place at the price of a huge loss at the same time as a continuous reinterpretation and reassessment of what is preserved" (Forquin, 1992, p. 29). There is a constant need for updating, weighing which indisputable elements of the past have accumulated with human experience, and which ones, tied in a conservatism, need to be declined rather than passed on as cultural filling.

Sometimes the reproduction of a cultural heritage that is explicit in the contents appears in an implicit or latent way. Forquin reiterates Bourdieu's concepts by affirming how teachings can be "incorporated into intellectual *habitus*, in thought models, in surgical procedures considered as natural and evident, in pedagogical traditions" (Forquin, 1992, p. 30) and so implicitly transmitted in the textbook.

According to one of the pioneers in research in the field of textbooks, Alain Choppin (2004), the textbooks perform four essential functions: referential function (also called curricular or programmatic); instrumental function (as a practical method of learning); ideological and cultural function (the one that transmits the values accumulated in culture) and the documentary function (the textbook seen as a set of documents and texts). Our focus in this study has been the ideological and cultural function, because "the textbook has established itself as one of the essential vectors of the language, culture and values of the ruling classes" (Choppin, 2004, p. 553).

The textbook is a complex object of multiple functions. We know that it is not only responsible for defining a school curriculum, but in the Brazilian case of art teaching, the book distributed by the government together with its video and/or audio materials often are the only resources teachers can count on in the classroom. Choppin recognizes the coexistence of various instruments in the school teaching-learning process, comprising those produced on other media

besides printed texts, in this case, audiovisual resources, didactic software, CD-Rom, internet: "The textbook, in such situations, no longer has an independent existence, but becomes a constitutive element of a multimedia set" (Choppin, 2004, p. 553). Given the centrality of such didactic resources in the Brazilian basic education system, it is pertinent to investigate their contents and, consequently, the cultural repertoire that the students are exposed to.

In her quali-quantitative analysis of a collection of textbooks used in Brazilian schools for the teaching of art and music, Andréia Schach Fey (2022) found that the repertoire of artists, musicians and composers presented to the new generation consists predominantly of men's names. Amongst the 749 artist names mentioned in the collection *Por toda parte* (Ferrari *et al.*, 2015), 577 of them are males, that is 77% of the mentions. In music the androcentric repertoire rises to 81% and in addition, the content tends to reinforce masculine stereotypes of crafts such as conductor, *luthier,* composer, while women are opera singers, Brazilian Popular Music singers (MPB) and instrumentalists.

From these theoretical foundations, considering the didactic manual (printed and multimedia resources) a material object of the school curriculum, which deserves necessary reflection and updates, our analysis in this article is carried out with the intention of verifying that there are no androcentric inheritances that require reassessment. Just as men were historically in the highest-profile positions (Perrot, 2007), the processes of selection of repertories for editing didactic manuals also have reinforced male dominance when they legitimate more men than women artists through the contents that are deemed adequate to be learned by students.

Methodology

The main objective of the research for this paper was to analyze whether the teaching resources that accompany the collection *Por toda parte* (Ferrari *et al.*, 2015) also present an androcentric repertoire, as identified in a previous analysis of printed books (Fey, 2022). For the analysis, we have selected the CDs that accompany each of the

four books and the indications of sites complementing the contents contained in the manuals.

The quantitative analysis of the four CDs was performed by identifying whether the author of each audio is a male composer, a female composer, or has no gender reference to the composer. Each of the books is divided into three units, and at the end of each unit there is a session called "Art Connection", where websites are indicated for consultations, suggesting artists by name, groups of artists or museum collections. We also counted the websites mentioned in the references in a session called "Art on the web", which also suggests names of artists, groups, and collections.

We then classified the authorship of the audios and artists indicated on websites, categorizing in male and female gender, and without authorship/museum websites. Added to the results within each category, we obtained the repertoire by genre presented by the media resources that accompany the textbooks.

A qualitative analysis was performed based on quantitative results, based on bibliographic references of Perrot (2007), Bourdieu (2012) e Forquin (1992).

Results and Data Discussion

Based on the quantitative analysis of the 4 audio CDs, which accompany the didactic collection *Por toda parte* (Ferrari *et al.*, 2015), the results are presented in **Table 1**. From 88 audios, 51 are from men composers, 6 are from women composers and 31 audios have no composer's reference, providing for definitions of musical concepts and musical practice samples.

Author's names by gender	Audios
Men	51
Women	6
No composer's reference	31
Total	88

Table 1. Analysis of the audio CDs(4) – AUTHORSHIP.
Source: Table 1 was produced by the first author.

The analysis of the gender from the artists mentioned in the didactic books' session "Art Connection" and "Web references", presented in the following **Table 2**. Of the websites suggested, 79 lead to a website of men artists, 21 to websites of women artists and 37 websites suggestions from museums or artistic groups.

Artists	Websites
Men	79
Women	21
Museums or artistic groups	37
Total	137

Table 2. Artists by gender in the website references.
Source: Table 2 was produced by the first author.

The predominance of male artists presented motivated us to elaborate a chart in which the low representativeness of women artists could be visualized. **Figure 1** shows the sum of the artists of the CDs and suggestions of websites, which total 157 names. Of these, 130 are mentions of male artists (83%) and only 27 of female artists (17%).
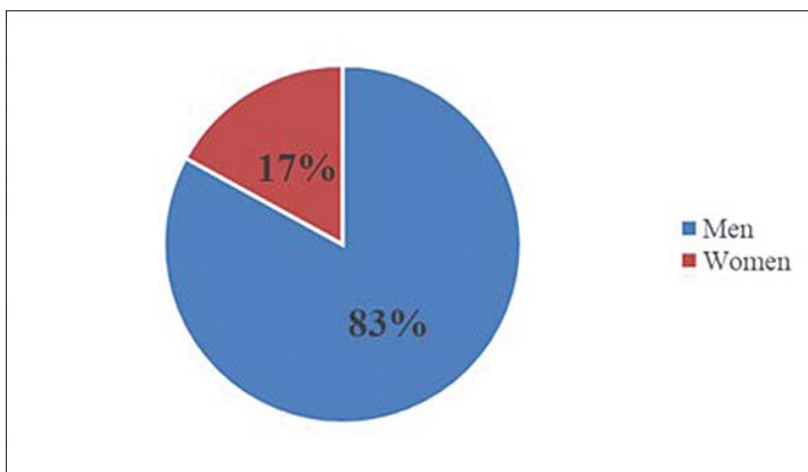
Figure 1. Repertoires from Media Resources.
Source: The first author.

The 6 audios written by women presented with compositions in the CD repertoire are productions of the 20th century, that is: Janete El Haoli (1955), Magda Pucci (1964), Graciela Paraskevaídis (1940-2017) and Chiquinha Gonzaga (1847-1935). The repertoire of the baroque, classicist and romantic periods only has masculine names as Bach, Beethoven, Mozart, Schumann, although there were women composers in these periods. In fact, Fey's (2022) work presents approximately 100 suggestions of women composers' names that can make up school repertoires.

Conclusions

The data confirms the hypothesis of androcentrism in the media resources that accompany the textbooks selected for the analysis. In a qualitative analysis, we have concluded that there is underrepresentation of women artists and historical lack of prestige of women as composers, relegating them to the roles of singers or instrumentalists (Perrot, 2007).

Bourdieu's (2012) notion of the androcentric *habitus* was useful when applied to the analysis, as we found that even though the media environment already features many women artists and composers, the school curriculum continues to perpetuate a sexist cultural heritage through the androcentric repertoire in the field of arts and music.

We suggest that the agents involved in the preparation of school textbooks and the accompanying resources broaden their perception of the extensive production of women in art.

A curricular transformation including women does not mean neglecting male productions, but it is an expansion of the repertoire, without deserving the great male artists and composers.

We emphasize the importance of disclosing the names of women composers whose works are available in the virtual environment and could be included in media resources, instead of remaining invisible in the curriculum.

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<p style="text-align:center">28.</p>

The Production of Teaching Materials by Teachers and Students from Thematic Complexes: Possibilities and Challenges

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ABSTRACT

The School of the Landless Rural Workers Movement (MST), in the Brazilian context, is a proposal based on the principles of the social movement that opposes the traditional and classical model of education. It proposes the restructuring of the school work, in particular those related to the contents taught and the different teaching approaches. For this, transformations in multiple dimensions are needed, including the relationship between universal contents and local life. This perspective is expressed by the proposal to organize the pedagogical work by study complexes or thematic fields. This approach gives emphasis to the selection of themes to be worked on at school, particularly those connected to social issues of the community. The research analyzes the production of teaching materials based on propositions and actions defined by teachers and students in the school context, as well as the resulting products. Observations were carried out throughout the process and records were made in field diaries. Reports, evaluation instruments and the materials produced were analyzed. Among other results, the research highlights the possibility of producing teaching materials which describe teaching processes developed in the classroom; show activities developed by students and the products generated; relate local reality to global processes.

KEYWORDS: *MST School; Thematic complexes; Production of materials by teachers and students.*

Introduction

The Movement of Landless Rural Workers (MST), in the Brazilian context, is the result of a historical process of resistance by people

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excluded from the right to land and other social rights such as work, health, and education. Originating at the end of the 1970s, the MST follows on from other popular struggles that took place at different times and in different regions of the country, such as "Canudos" in the backlands of Bahia (1896-1897) and the "Contestado War" in the south of the country (1912-1916). Today, the MST is structured in 24 states, in the five regions of the country. There are about 450 thousand families who conquered the land through the struggle and organization of rural workers.

Among the objectives of this social organization is the guarantee of the right to education and to schooling processes in the place where the people live – in this case, the rural areas – and also the right to have an education constructed with and by the people who live in the countryside. The educational proposal of the social movement is opposed to the traditional model of education and aims to restructure the forms of school work, particularly those related to content and ways of teaching. One of the central elements of the project is precisely the articulation between universal knowledge that should be taught to new generations and local culture, especially life and work in the countryside.

Although the rural schools develop differentiated experiences and are oriented in this direction, they belong to the regular education systems (federal, state and municipal, according to each level of education) and, therefore, they should follow the general norms and participate in programs and actions defined in public educational policies. In this sense, the organization of the MST schools should observe the national curricular guidelines when defining contents and didactic procedures.

Among the national policies that affect the organization of teaching, the National Textbook Program (PNLD) stands out. This government action enables all schools, regardless of where they are located, to benefit from the program, as resources are guaranteed within the Federal Government to buy books and distribute these materials to schools free of charge. Currently, the PNLD offers the same books for the choice of rural and urban primary and secondary schools.

The research is justified in this context. The problem arises from the tension generated, on the one hand by the presence in MST schools of textbooks produced to teach universal knowledge in all

Brazilian schools, and on the other hand by the need to privilege local knowledge. To investigate issues related to this problem, a project was developed and analyzed to produce teaching materials based on proposals and actions defined by teachers and students in the school context, as well as the product resulting from this process. The text presents the results of collaboration between the Federal University of Paraná, through the NPPD, and a public school located in a rural area in the Municipality of Abelardo Luz, State of Santa Catarina – the Paulo Freire High School.

Theoretical Framework

By taking the local culture as a reference for teaching, it is possible to build relationships that allow students to broaden their understanding of themselves and of the world. The perspective of relating the universal contents to the local culture has theoretical support in authors such as Freire (1996). It also dialogues with the proposal of organization of pedagogical work by study complexes/thematic fields (Sapelli, Freitas, & Caldart, 2015) that analyzes processes of choice of themes to be worked on at school and suggests that they should express links with social issues of the community.

The perspective is also in line with studies developed in NPPD/UFPR, especially in the Recreating Stories Project (1997-2017), which proposed the production of books based on local culture, in a process that involves collaboration between teachers, students, the community and the university (Garcia & Schmidt, 2011). For the authors, the production of textbooks by teachers, with the support of specialist researchers, constitutes a privileged space for continuing education and provides an opportunity to deepen knowledge about the didactics and epistemology of the knowledge to be taught.

Finally, the problematic is supported by results of research conducted on the experience of the Paulo Freire High School (Vieira, 2018; Vieira & Garcia, 2019), evidencing that local culture was a relevant element in the pedagogical process and in empowering the identity of the school and its community. Among other analyzes, when focusing on the textbooks in use it was reported that "alongside the

books produced for the set of public schools in the country, it would be necessary to think actions to support the production of other materials, including by teachers and students, which are developed with reference to local culture" (Vieira, 2018, p. 226).

Since the origins of the MST, having schools in the encampments and settlements has been an objective need and is incorporated as an essential part of the struggle waged, guaranteeing the offer of school education in all levels and modalities of teaching to the population living in these spaces. The movement's proposal is opposed to the old model of Rural Education which precariously met the educational needs in rural areas.

In the last three decades, rural entities and social movements have joined with the MST in constituting the movement for "Countryside Education", an experience that has developed with advances in public policies; in the inclusion of the theme in educational legislation; in the recognition of the specificity of these schools; and in the expansion of partnerships between social movements and universities.

In this context, many schools were built all over the country. The Paulo Freire High School is one of the schools conquered in this period; today it receives one hundred (100) high school students and is located in the municipality of Abelardo Luz, where the largest number of settlements of the state of Santa Catarina is concentrated – there are 1,500 families in 22 settlements.

The school bases its work on emancipatory perspectives, especially the Pedagogy of the MST (2005), which has references in Russian Socialist Pedagogy. Recently, new translations of Soviet pedagogues, collective study, and the proposal of experiments in schools have allowed advances from the theoretical and practical points of view, particularly with respect to the restructuring of forms of school work related to contents and ways of teaching.

It should be pointed out that one of the central issues to make the necessary transformations is the construction of relations between the universal teaching contents and the local life and culture of the communities, which allows raising awareness about particular issues and problems in their insertion with the global dimension, with the contemporary world. From this perspective, it is evident the importance that is attributed to the processes of choosing the themes to be worked on at school.

Methodology

The central theme of the research focuses on the textbooks in their relation to the school project of the Landless Rural Workers Movement (MST), specifically on the articulation between the universal knowledge that should be taught and the local culture, with an emphasis on life and work in the countryside. The study analyzed the process of the development of textbooks by teachers and pupils from a school in a rural area, the purpose of which was to propose a working alternative based on study complexes or thematic fields.

The research proposed the following guiding questions: What are the limits of textbooks of national distribution to include elements of local reality, especially in a country of great diversity like Brazil? Recognizing the working conditions in public schools, especially in rural areas, are there possibilities for the production of textbooks by teachers and students in order to make the desired approximation with local life and culture? What characteristics would be interesting for materials that comply with the organization by thematic complexes? What conditions are necessary for this production? Are there limitations?

The procedure included teaching, research and extension activities, and was developed in a collaborative manner between the School and the University. It involved teachers from the three areas of knowledge of the official curriculum: Languages, Humanities and Natural Sciences. Pedagogues from the school, teachers and scholarship holders from the university and design and publishing professionals also participated.

The empirical work was organized in stages, namely: discussion and organization of the proposal; textbook analysis to locate gaps and possible themes for alternative textbooks; choice of the thematic field that would organize the book, study of this theme and proposition of work with students; collection of the material produced by the local project coordinator; production and review of the text written by area; editorial and graphic production.

The production of data in the empirical research included different strategies. Observations were made throughout the working process in the school, with records in field notebooks; reports, evaluation instruments and the materials produced were analyzed; teachers' and

students' testimonies were collected. From the data produced in this set of strategies, indications and evidences were extracted for the systematization of some results.

Results and Data Discussion

The process of producing the books was preceded by studies of textbooks used in the school to verify the presence of contents or strategies for valuing knowledge about specific realities, especially about life and work in rural areas. The presence of relations between local and global issues was also analyzed. Based on these analyzes, the local group defined the theme which would articulate the contents of the different areas of the curriculum, planned the activities for each of them, discussed the possibilities of interaction between the areas, developed the activities with the students and recorded (through different means such as texts, photos, exhibitions, videos) processes and products of the work carried out. The accompaniment and analysis of this process allows us to point out some answers to the questions formulated about the limits of the national textbooks and the possibilities of producing textbooks that establish the expected relationships.

a) On the Limits of Nationally Distributed Textbooks in Including Elements of Local Realities

Although they may have their importance and their use denied at first, the presence of the textbook in school life is a reality, as well as the high degree of impregnation of the books in the constitution of the teaching and learning processes, as had already been noted in previous research (Vieira, 2018; Vieira & Garcia, 2019). Despite the PNLD evaluative processes, some teachers expressed their refusal to use the books and made criticisms regarding stereotypical ways of presenting the work and rural populations, which is perceived even by students.

However, even when textbooks are not used, evidence shows that there are relationships between ways in which teachers structure their

teaching work and ways in which textbooks are organized (Vieira, 2018, p. 224). This relationship finds explanations in Choppin (2004), particularly regarding the programmatic function: school practices reproduce a set of universal knowledge present in books, considered valuable for society and necessary for new generations.

In the Brazilian case, the National Textbook Program has acted to control the production of books through evaluation criteria to be met by commercial publishers for their books to be approved; the result has been a process of homogenization of content and form, restricting the production of differentiated books. On the other hand, the evaluation criteria emphasize the need to connect the knowledge to the students' reality, a requirement that dialogues with the MST's suggestion that the schools should take reality as a starting point, problematizing local life and culture in relation to other dimensions of social and natural life and, therefore, with universal knowledge.

In this perspective, considering the limit of the national books, the challenge of the research and the production of other materials has been "to relate local contexts to others – regional, national, global – since the explanations about local processes are not exhausted in this space of social life, and can only be understood in relations with other contexts" (Vieira, 2018, p. 224).

b) On Possibilities of Book Production by Teachers and Students to Bring Universal Knowledge Closer to Local Life and Culture

This was the central objective of the collaborative research developed by the group of 16 teachers and 80 young pupils, with the participation of other educators and with support from other specialists who contributed to the production of books referred to local life. The results showed a positive response from this production process, which can be summarized in a few points:

– *(b.1)* Three volumes corresponding to each of the three areas of organization of the curriculum were produced, accompanied by an introduction and the theoretical and methodological justification for the choice of the articulating theme – "Territory".

Figure 1. Reproduction of the covers of the three volumes: Solid waste in the territory (Natural Sciences and Mathematics); Communication and Culture (Languages); Human and social sciences and class struggles in the territory (Human Sciences).

Each volume focuses on one of the areas, but establishes relationships with the work developed in the others, an articulation that was made possible by the contact between the teachers of the group, from an interdisciplinary and multidisciplinary perspective. Although in each of the volumes one of the areas of knowledge is highlighted, relationships are observed between them. As a strategy for the production of the volumes, there is a presentation of the planning carried out by the teachers, the contents in focus and also reports on the activities carried out with the students, including photos and images of the results obtained, in a structure that creates references for other similar projects.

– *(b.2)* Choosing the theme "Territory" enabled the articulation of local issues – such as the territorial occupation of Brazil from 1530 onwards – with global issues – related to the expansion of the processes of exploitation of colonies, enslavement and displacement of populations to perform slave labour in the colonies. It also allowed us to relate the forms of occupation and distribution of land in the country with the struggles for land reform that resulted, in the 1990s, in the existence of the settlement where the Paulo Freire School is located today. The study of the process of constitution of the settlement, the carrying out of field research into local work and economy were elements that stimulated the analysis of questions related to the construction of the Modern State and

its functions, to Capitalism and its transformations over the centuries, as well as to Globalization, which shapes the contemporary world.

In the Language area, the option was to establish a relationship between the theme and the "people who are at school", in the words of the authors of the volume. Opening questions about the lives and experiences of these young people who live in the settlement, the work proposed a relationship between the Territory where they live and study and the care of their bodies, food, leisure and health. The result of this proposal was an understanding of the "Body and Identity as a territory", a focus that led to questions of diversity and led, among other issues, to the native populations of Brazil, cultural elements from Latin America such as yerba mate and political and linguistic issues of the South American territory (going back to the Treaty of Tordesillas, which divided the land to be colonized between the Portuguese and the Spanish before 1500).

In summary, it was observed that these characteristics present in the materials produced responded to the intended objectives of establishing bridges between issues of local life and culture with issues of other dimensions of social life. At the same time, it was observed that the material presents descriptions of the teaching processes and results of the work carried out with the students, highlighting the value of the proposal for the involvement of young people and the reconstruction of meanings. These characteristics, therefore, present potentiality for the development of proposals of organization by study complexes/thematic fields.

Final Words: Possibilities and Limits in the Collaborative Process

Among other results, the research highlights the possibility of producing teaching materials which: describe teaching processes developed in the classroom; show activities developed by students and the products generated; relate local reality to global processes.

The analysis of the materials produced showed that they also present elements of assessment of the learning that took place be-

tween students and teachers, as well as the way in which such learning contributes to changes in the community at the same time that the knowledge of the community affects the production of these resources. Regarding the limitations, there is need of technical support for the graphic production of the materials to be improved.

As an element of advance, it is highlighted that the teachers involved in the production developed their abilities to systematize their didactic production. Although many had already developed work within the perspective of thematic complexes, records were shared in meetings and discussions, but were not recorded in a more permanent way. The elaboration of the books required efforts of theoretical systematization to justify the choices and the procedures, besides presenting the results of the activities developed with and by the students.

Within the limits observed, the long time necessary for the development of the written production stands out, once the timetable of weekly classes is high and little time is left for planning and didactic production activities. Leisure time was used to carry out the project, which indicates the need to continue the claim for better working conditions for Basic Education teachers, so that they can also include the authorship of books and materials in their duties, thus performed in times provided in their contracts.

Finally, we highlight the need for cooperation between the university and basic education, which was necessary in this particular case to support the final revision of the texts and the graphic and editorial production of the volumes; this activity demands specific professional knowledge in the field of design and visual programming which, in general, are not present in the settlement school communities.

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29.
Children's Books and National Identity: The Gender Perspective

PAMELA GIORGI[*]

This contribution addresses the issue of gender stereotype in youth literature books (1865-1937). It describes what was the female model presented to the younger generations, in Italy, during the post-unification until to the fascist state and how this aspect lies in the context of the national identity's construction.

KEYWORDS: *Gender stereotype, Children literature, Fascism.*

Introduction

The time frame of my examination starts with the Italian National Unification (1865) until 1937, the year preceding the promulgation, in Italy, of the anti-Jewish racial laws (laws aimed by a radical exclusion of diversity in favour of a national and racial identity). I refer to a research carried out among the "Antiquarian Youth Literature" present in the INDIRE bibliographic fund. This research started in the 2018 and its findings are discussed in the book *Lo straniero di carta: educare all'identità tra Otto e Novecento* (Anichini & Giorgi, 2020). In our research we analyzed texts in the INDIRE's collection of children's literature and how those texts contributed to building the sense of national identity.

INDIRE preserves today an important historical heritage, composed of archivistic and bibliographic materials, closely connected to the pedagogical theme:

– An extensive Archive, that preserves the documentation relating to the activity of INDIRE's institutional antecedents (first of

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all, the National educational exhibition of school products, Florence, 1925), person archives, archives of school materials and an important photographic archive.

– INDIRE's Book heritage is composed of schoolbooks, children's literature, and a group of texts dedicated to teaching from the 15th to 19th centuries.

We are outside the school text in "the strict sense", but nevertheless we referred to texts for young people that for a long time were also used at school and that, in any case, had explicitly formative purposes.

Results

Our research tried to show how youth literature texts contributed to creating the cultural, linguistic and social identity of young Italians, in the historical period indicated.

These were the years of the affirmation of the unitary bourgeois liberal state and then of the fascist one. These two forms of statehood were very different from each other, but in order to consolidate they both made use of the media to make people conform to their ideals.

The question of national identity in Italy was more complex than elsewhere in Europe: the inhabitants of the peninsula did not have a common homeland, they were foreigners to each other, although they were united only by the common struggle against an oppressor, a foreigner-enemy par excellence. After Unity, Italians needed school, training, a common culture to spread and take root by connecting territories and stories separated by decades.

Together with the school, in this process of identity building, children's books and their illustrations constituted powerful tools to influence the young people. Italian children, future citizens, to recognize themselves as the only people, needed to be reminded of the existence of those who were "others". For this it was necessary to build for children the concept of "enemy" external and internal to fight. Building national identity also meant defining who was a good Italian from who was not: what was acceptable from what was unacceptable, and for this reason "foreigner" meant "enemy".

Intellectuals saw children's literature as a powerful vehicle to imprint the generation of new Italians. In those years the first magazines

for children were born: in 1837 the prototype of the educational book was very successful, with the publication of *Giannetto* (by Luigi Parravicini).

The text for children becomes a key element for the diffusion of a common language, for an identity construction of young people, offering them pleasant activities and readings to learn the rules of good living. It must be clear that those who did not respect these rules of good living would be foreigners even if Italian.

On this topic, from the analysis of the INDIRE bibliographic corpus, it emerged that:

1. "Foreigner" was primarily the one who was an external threat to the Italian borders (the barbarian, the invader): the "enemy beyond the Alps" (who had dominated and had been expelled from Italy, for being an independent nation).

2. "Foreigners" were also, in a logic of economic expansion, the savages of the distant lands of colonial conquest, the indigenous of the colonies and lands "to be discovered" (dangerous and uncivilized to be re-educated).

3. Was also "foreigner" who, though theoretically being an Italian, would become an internal enemy because was living outside the bourgeois model: the poor, the marginal, the dreamer, the rebel, the woman who was not subject to the rules. For the new Italian state, building itself meant creating an order, whereby citizens would respect the bourgeois economy and its social hierarchies (between rich and poor, between men and women).

Without respecting these rules, they were Italian but "placed outside": therefore it was necessary to instruct the new generations to learn the "good" path to take to grow and become good citizens. Future adults, workers, orderly, obsequious to the conventional way of life and functional to the new bourgeois state.

It is clear that the lemma "foreign" possessed a very rich and multifaceted complexity that was always linked to the theme of the homeland, its defence, its construction and to the theme of national identity.

From our analysis it also emerged that Italians were educated to "suspect" some categories of subjects:

–   First, the traveler – not so much those traveling for business reasons, the integrated traveler (professional, explorer or sci-

entist), or the migrant seeking fortune abroad – but those who fled, the poor, the wandering artists living on expedients.
– Second, the woman, where she did not devote herself to her main duties: motherhood, being a daughter and wife, dedicated to domestic care.

Italian publishing, until the end of the 19th century, produced some editorial series specifically dedicated to the 2 genders.

For BOYS: in which there were stories to teach strength, endurance and courage.

For GIRLS: The manuals for young women with stories to teach the domestic, maternal, religious and civil virtues to which a young woman should aspire.

In the texts considered, women, in order to be integrated (not be considered as a "foreigner"), should respond to the common moral and juridical model, according to which inequality between the sexes and male privileges were accepted.

In Italy, more than in the rest of Europe, women were excluded from political participation (which in the meantime was gradually extended to wider sectors of the population). Women were subject to the power of their husbands, deprived of the availability of their goods, deprived of equal pay treatment with men (think, for example, about the teaching staff: in Italy small public administrations preferred women as teachers because they were less paid than men).

Women of the popular classes had to work for economic necessity. But the more virtuous model proposed by children's literature was that of women belonging to the wealthiest classes, devoted brides and exemplary mothers closed within the walls of their home. The good girls were prepared through books for marriage and custody of the house.

The heroines of children's novels were silent, pure, polite, dedicated to housework: girls had these models in the books dedicated to them.

Among the heroines depicted in children's novels there were sometimes figures who looked different from the prevailing model, though accepted: an exception is Jolanda, the daughter of the Black Corsair (by Emilio Salgari): she is an adventurer who moves between sea and islands, travel is her paternal legacy, between adventures, love and revenge.

But in general, women have to fear the journey, that goes to undermine and break the family order, of which they are responsible for: for example, the mother of Marcuccio, ne *I piccoli viaggiatori* (by Ida Baccini [1878] – a writer who was still placed on advanced positions and who was herself an example of female emancipation): in her opinion a trip is just an unnecessary risk. In the same novel, Baccini describes a young traveler, Miss Mary: she is not an adventurer, but a wealthy class girl, accompanied by her father (a rich merchant) and their faithful servant Ali. Here the "natural" order of things is respected: a rich girl could be a traveler.

In those years, in Italy, we could find a different type of heroines in the translations of children's books by English authors. In *I giovani viaggiatori / Young travelers* (by Thomas Mayne Reid [1880]): the two independent and brave protagonists, Grace and Jenny, had their adventure in the frame of Canadian landscapes, struggling with a task that was generally entrusted to men: how to shoot. Or in another italian translation, *Il Robinson delle fanciulle / The Robinson of the Maidens* (by M.me Woillez), the protagonist Emma, after a shipwreck with her trusty dog, Azor, manages to survive, as the homonymous Robinson Crusoe, thanks to her intelligence and courage.

We can find the majority of heroines in Italian translations from English books, because in England, earlier than in Italy, the condition of women had been questioned by the suffragettes, who asked to become autonomous political subjects, with equal political rights, against the exclusion from culture and subordination.

The Anglo-Saxon world was already very advanced, if we think that in the "International conference on women's rights", held in London in 1899, Italy was represented by the doctor and educator Maria Montessori (who, in order to be able to enroll and graduate, in Italy, had to ask for pontifical intercession).

Conclusions

In general, children's books (like a real Italian society, where the first wave of feminism had not scratched that patriarchal model) had the task of reiterating a model according to which women were educated to submission and deference. From the Twenties onwards,

with the rise to power of fascism, when the Anglo-Saxon world was banned in Italy, the position of children's books regarding women becomes even more conservative: women are not allowed any other role than being a wife and a mother.

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30.
Foreigners in Media for Children:
The Representation of the Difference
in 19th and 20th Century

ALESSANDRA ANICHINI[*]

ABSTRACT

How has "difference" been represented for the new generations, during the long process of national identity construction, in Italy? How has adult normativity shaped children's literature since its origins? And how have figures such as the emigrant, the foreigner, been perceived? This article analyzes the theme of the "stranger" in nineteenth and twentieth-century textbooks. Textbooks and children's literature, contribute to creating a stereotype without which the politics of those years would not be possible: education in acceptance, tolerance, or, sometimes education in rejection, intolerance in the name of an idea of homeland and of a sense of identity that is considered essential for the new country. The book proposed to children represents an educational tool aimed at control. The stereotype/model proposed both in the liberal age and, more markedly, in the totalitarian period often implies an accentuation of the theme of differences that separate the "outside" from the "inside" of a community, the similar, the known from the different, the unknown.

KEYWORDS: *Imaginary; Textbook; Educational media; Foreigner.*

Introduction

The aim of this paper is to present a research carried out on a specific library fund, conserved at INDIRE (Istituto Nazionale di Documentazione Innovazione e Ricerca Educativa), in Florence, and pertaining to volumes and magazines for young people belonging to the end of 19th and to 20th centuries. This particular fund was recently cataloged and studied by Pamela Giorgi, Marta Zangheri and Irene Zoppi (2018). As others, it has been preserved in INDIRE as a legacy of the School Museum that dates from 1929 and it consists of a large

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number of volumes ranging from the beginning of the 19th century to the first half of the 20th, all attributable to the category of "school books" in the broad sense given by Alain Choppin (2008) and Giorgio Chiosso (2009). This fund counts almost 550 volumes, of various nature, the most recent dates back to 1812; the oldest dates 1909, with some volumes until the third decade of twentieth: they are proper textbooks, children's literature books (some of them translated from French and German), encyclopedias and dictionaries, a few volumes of pedagogical theory and also magazines.

In this research, the fund in question was analyzed by isolating a theme that seemed to be of great interest in today's political and cultural landscape. The theme is that of the "foreigner", understood according to a broad meaning that we will try to define. This survey is only the first attempt at an in-depth reading of our book heritage, which could include further thematic investigations as well as comparative surveys of funds from other institutions. This fund is rich in recurring themes that characterize the publishing policy of the century in question; a century that is very significant in the Italian scenario because it coincides with national unification and the political attempt to spread mass schooling throughout the whole country (Chiosso, 2009; Galfré 2005).

The historical interest of the research thus combines with more sociological nature aspects, which start from the definition of the concept of "imaginary", linking it to a topic that is so central today and we can summarize as "the encounter with the other", with the "difference", in the cultural sense of the term. The research is also fueled by a reflection on the theme of "media for children", that is all those instruments capable of conditioning, more or less conscious, on the minds of young readers (Procacci, 2003).

The books and the magazines proposed to children (school texts or evasion literature) are, in fact, instructive-educational tools aimed at controlling and addressing, offering stereotypes and models for people who are not yet adults but are making the necessary path to become so. The stereotype/model proposed both in the liberal age and, more markedly, in the totalitarian period often implies an accentuation of the theme of the "differences" that separates the outside from the inside, the similar from the different.

It is widely established that children's literature and textbooks contribute and have contributed to the building of opinions, attitudes

and cultural postures (Fuchs & Bock, 2018; Moeglin, 2007; Tisserant & Wagner, 2008). Reading books, textbooks, magazines are defined and recognised as "educational media" (Bruillard, Anichini, & Baron, 2019), because of the important role they play in education. They can be counted among those objects that the institution elects as an instrument of continuous "recreation" of the given arrangements, as an intermediary (a medium) between the social norm and the individual experience ("Institutions are also represented in other ways: their linguistic objectifications, for example, at whatever level they occur, recreate them – that is, they make them present – in experience. And they can be symbolically represented by physical objects, whether natural or artificial", Berger & Luckmann, 1969, pp. 109-110). This particular kind of cultural product is intentionally oriented towards the future citizens' education, by the admission of the cultural protagonists working in various fields and eras. This is particularly evident with regard to the scenario that this research has taken into consideration: Italy at the end of the 19th century and the first half of the 20th century, a time so close to the recent formation of the unitary national state. This was an era full of "educational intentions", aimed at building a national identity that was still weak and had to be nurtured through the use of a series of "expedients", including the construction of a "collective memory" that was still not very felt or even absent in the case of populations (those of the various Italian regions) traditionally separated by customs, beliefs and cultural traditions. In these years, the textbook, in particular, became a vehicle for values and suggested behaviors that were at the basis of the delineation of the "good Italian".

This literary form (textbook) was complemented by other printed products, such as children's magazines, which multiplied in these years thanks to the development of the publishing industry. In these years, in fact, various magazines aimed at children and young people were published: between 1877 and 1906, there were 12 in Milan. The publisher Treves, who was very attentive to market changes, created two magazines for children: the "Giornale dei fanciulli" and "Mondo piccino". In Milan, starting in 1879, the illustrated weekly magazine "Frugolino" was published, while in Florence, the "Giornalino della domenica" was published by Bemporad, founded by Vamba and published until 1927 with contributions from famous writers such as De Amicis, Deledda, Capuana and Salgari; these products were

not intentionally used in the process of young acculturation, but rather intended for recreational moments, in that sphere that today pedagogical culture defines as "informal education". These cultural products, although apparently marginal, are no less significant than those officially designated as training aids. They contribute greatly to building the imagination of young people, influencing attitudes and visions.

When we speak of "imaginary", we are referring here to a theory that draws on a long cultural tradition. While the expression "collective imagination" has been part of everyday language since the 1990s, the concept goes back many years and is nourished by studies belonging to different currents of thought. It was precisely in the 1920s and 1930s (the years we are dealing with in this article) that emerges the idea of a symbolic dimension that springs from the real one and in turn feeds it, in a game of cross-references and connections that allows us to anticipate the more recent concept of "mediamorphosis" (Fidler, 2000). The Frankfurt school laid the foundations of a theory that would mature in the 1960s and 1970s, thanks to scholars such as Le Goff, Bachelard, Lévi-Strauss, Morin and McLuhan. They speak of "collective memory", of individual and social identities built through systems of values and behavior, of sharing a narrative of meaning, of "fictions of humanity" (Le Goff, 1979), which every man learns and re-elaborates, first through family's experience, then through the various educational, religious, work and political institutions and finally by drawing on a culture spread through the media, whether it be the press or the radio, followed by television. Particular attention is paid to the relationship between collective memory and social norms, between individual development and social representation that takes place in familiar and relational practices as well as through readings and information systems in general (Luhmann, 1984). This is an exchange between individual and social dimensions that feeds on routines, shared practices, repeated commonplaces: "Intersubjective sedimentation can only be defined as truly social when it has been objectified in a system of symbols of some kind, that is, when there is the possibility of a repeated objectification in common experiences" (Berger & Luckmann, 1969, p. 101).

In this way, words and images recurring in the texts we have examined contribute to the creation of a system of symbols destined to settle in the minds of children and young people called upon to play

an active role in the construction of the national state. They nourish imagery destined to be translated into attitudes and behaviors.

Children's books from the 19th to the 20th century, therefore, speak of "homeland", "nation", as well as "foreigner", "enemy", proposing what have been called "typing schemes", something very close to preconceptions through which the direct experience of things and people is filtered and lived. "The reality of communal life contains typing schemes in whose terms others are perceived and treated in direct encounters" (Berger & Luckmann, 1969, p. 53).

Starting from these assumptions, we have tried to trace inside the texts examined those symbolic systems that define the idea of "foreigner" as it was proposed to the Italian youth of the end of the 19th century and the first half of the 20th century. An analysis that is first of all linguistic, insofar as it observes the meanings attributed to terms such as "foreigner", "stranger" and others belonging to the semantic field that the word indicates. Language contributes, in fact, to the creation of "zones of meaning", "immense edifices of symbolic representations that seem to tower over everyday reality like gigantic presences belonging to another world" (Berger & Luckmann, 1969, p. 64). Like words, also images contained in the texts analyzed outline a set of meanings that refer to a precise interpretation of the category in question and provide a well-defined, more or less explicit representation of it.

The reading of the texts therefore makes it possible to outline not one, but several representations of the "foreigner" as conveyed by the words and images of the volumes, according to a complexity that we will explain in the following paragraphs and which describes an interesting and varied picture.

Methodology

The methodology is based on sociological media research methods, and takes its cue from historical research. In particular, the content analysis method has guided our work, supported by an extensive survey of historical documentation relating to the period under examination and the context to which the volumes analyzed refer.

Some main questions have guided our research:

– How was the "difference" represented for new generations, in the long course of the process of Italian national identity building? How has adult normativity shaped children's literature since its origins?

And also:

– What has been the perception of foreigners in our country over the years and what idea of them has been nurtured by schools and political and cultural institutions? Can we trace, in the first decades of our nation's constitution, the seeds of the upsurge we witnessed in the Fascist Thirty Years, a period marked by phenomena of rejection and persecution? How much the perception of "difference" expressed during the decades analyzed resists and permeates today's perception?

The questions are linked to an emergency that today concerns Italian schools and that we could summarize as "need for integration" and "need for coexistence". In spite of the great schools' commitments, we are still witnessing a difficult relationship with "cultural metissage", a phenomenon that is increasingly evident in our classrooms and which requires teachers and adults in general to reflect deeply on the issue of cultural identity. We thought that our research could constitute a contribution, albeit modest, to a much-discussed subject which is too often resolved in simplistic terms, renouncing more complex approaches which also highlight its historical depth. The basis of analysis is not very wide, but it seemed sufficient to propose a reflection that could widen and lead to interesting developments. In fact, our analysis still lacks a look at more recent years and at the present, since our investigation, still very partial, stops at a small sample of texts from the end of the 19th and beginning of the 20th century.

In order to answer the research questions, we had at our disposal a specific book collection, already cataloged and ready to be investigated. A significant collection, both from a quantitative point of view and for its very nature, being the result of a selection made by the Museo Didattico Nazionale (set up after the National Educational Exhibition of 1925 in Florence), therefore, of a specific institutional vision such as that of an institute that started its activities during the thirty-year Fascist period. These considerations could be misleading about the nature of the fund itself, an idea already addressed by Giorgi (2010), who highlighted the substantially anti-Fascist nature of the

Museum, led by prominent figures, often in conflict with the regime, despite the institutional collaboration with it.

The INDIRE Fund represented our database, that we analyzed, through a careful text reading, both from literal and iconographic point of view, referring to the words as well as the images proposed by different books and magazines. The content analysis process has been inspired by the traditional formalization of Bernard Berelson, with the due adjustments required by the particular research context. We report the followed phases:

1. Research questions and work hypotheses have been formulated after a careful review of the literature. Our research has been inspired by several areas of investigation, from philosophy to history and publishing history. Some texts such as Giulio Bollati's *L'Italiano* (2011), Umberto Eco's *Costruire il nemico* (2011), Remo Ceserani's *Lo straniero* (1998) have been the starting point for our work; as was François Jullien's *L'identità culturale non esiste* (*Cultural identity does not exist*, 2018), which allowed us to orient our idea of "cultural identity" according to a precise interpretative and value-based point of view. Indeed, the provocative title of the French philosopher's short essay alludes to the contradiction inherent in the concept of cultural identity as we perceive it, an idea with significant implications, which, as we saw, already appears in the consciousness of some authors of the centuries under review.

2. After the research questions formulation, the field of investigation was better defined, identifying and specifying the theme and the time span of the investigation as well as the characteristic of the sources to be analyzed. The analyzed volumes and magazines belong to a very significant period for our country. It includes almost a hundred years, from the end of 19th century to 1938, year of the racial laws promulgation, in Italy, on the threshold of the Second World War. The idea of "foreigner" has been multifaceted in a series of subcategories that we have then analyzed.

3. We have selected the sample of analysis corresponding, in our case, to the above-mentioned fund in its entirety, considered as a selection made during the years by the selective logic of the Institute that collected and preserved it. In this sense, as

we were saying, the sample is doubly significant because it is representative of an epoch (though certainly not exhaustive) and of an "interpretation", based on the culture supported by the Institute itself.

4. The units of analysis are constituted by the texts themselves, in their complexity and variety. As we said, they consist of single passages, more or less consistent, excerpts of text intercepted and selected that contain a reference to the topic, as well as corresponding images, representative of the topic itself.

5. After a first analysis of the identified sources, we proceeded to the construction of the analysis grid, suggested by an extensive reading. The categories have emerged from the texts and it has been necessary "to facet" the topic in a series of sub-categories. After a first look at all volumes, in fact, we tried to define a framework for analysis. We provided a categorization of the different meanings of "foreigner", identifying different definitions: "foreigner" understood as an external person occupying the national soil (that is "the enemy"), but also "the exile" (that is sometimes "the friend"), "the emigrant", as well as "the traveler" for pleasure or profession, and then the marginality in all its forms, from the beggar to the wanderer, until the idea of a "foreigner" as a man belonging to a different race, a representation very relevant for the colonial policies of the years of Fascism. The term "foreigner" is sometimes connected to the term "stranger" by insisting more on the meaning of "unknown" and "strange".

6. Subsequent operations did not involve quantitative analyzes carried out using software, but were based on in-depth reading and filing individual sources.

7. The collected passages were classified and coded according to the identified analysis grid. The same was done for the iconographic element of the volumes analyzed. In other words, a sort of archive of passages and images divided into categories and indexed in chronological order was built.

8. Subsequently, collected data have been re-read and analyzed up to their interpretation, which meant constructing a discourse of meaning offering an articulated scenario of the topic of "the foreigner".

We would like to point out that the method of analysis followed, while referring to the literature indicated, differs in part due to certain methodological choices. Since this is a research that, as we said, straddles different disciplinary fields ranging from history to mediology and the sociology of knowledge, we have preferred mixed methods. Moreover, in line with our particular conviction, the research process does not make a clear distinction between the phase of data collection and that of its interpretation. In this sense, we followed the methodology of "generative communication" (Toschi, 2011), which maintains that "philology" and "criticism" are two sides of the same coin, used in all phases of work, with a varying weight, according to the steps.

Results

No One, but Different Foreigner's Representation

The analysis leads us to establish a sort of diachronic development of the idea of "foreigner", which from the second half of the 19th century develops and culminates in racist proposals of Fascism. Following this chronological order, we can identify a series of dominant themes that characterize various moments of the editorial and political history.

The grid drawn up during the analysis phase allows us to identify some subcategories of the topic. The concept of "foreigner" was read, as we said, highlighting different meanings. Consulting the Italian dictionary Tommaseo Bellini, published between 1861 and 1874, the most widespread in the years we are dealing with, we were able to approach the word "foreigner" with a wide range of meanings, which in a pejorative climax, starting from the definition of *forestiero*, that is, inhabitant of another region, goes as far as the idea of "strange", "repugnant", "despicable". If "foreigner" is in fact, in the first instance, someone who comes from a country other than Italy (in the years of the Risorgimento this often coincided with the idea of the occupier, the Austrian, usurper of the country's political freedom), "foreigner" is also someone who lives on the margins of the society, who live an existence far removed from bourgeois logic, far from the generally accepted models of social stability and respectability.

The Tommaseo Bellini vocabulary definition, indicative of a widespread interpretation in the years in question, provided us with the key to the development of an interpretative grid that took into account the semantic nuances associated with the term. Several categories of "foreigner" were identified during the extensive reading of the texts:

1. The "foreigner" living in another nation, threatening insofar as he belongs to a people usurping the political rights of the Italian nation. This is the first and simplest meaning, to which the strong idea of 'homeland' as a political and cultural identity construction is connected.

2. The "foreigner" is seen as a "stranger", coming from a not-so-distant land, perhaps belonging to a different region of Italy, and in any case the bearer of different cultural traits and habits in the varied reality of Italy at the end of the 19th and beginning of the 20th century. This kind of "stranger" is looked upon with suspicion, although with less bitterness than other categories.

3. The "foreigner" as a "traveler", passing through lands other than his own. However, travelers are not just one kind. There are travelers for pleasure, travelers for work (the merchant is the typical representative of this category), as well as travelers driven by more compelling reasons, including exiles, but also wanderers, gypsies, circus people, or beggars in search of fortune, figures on the margins of a society founded on stereotypes of order and settledness.

4. A very significant category is that of the "emigrant", a traveler out of necessity, driven by economic motivations that lead him to seek his fortune in a country other than his own. In this case, the subject becomes very important, since many Italians were emigrants in the end of the 19th century and in the beginning of the 20th. The emigrant is pitied by his fellow countryman and his being a "stranger in another country" is seen as an indictment of the host people.

5. Exceptional travelers include those who travel for the purpose of conquest, soldiers and adventurers linked to the colonial wars that afflicted the years we are dealing with. The conquest of countries considered to be "less civilized" in turn entails meeting foreigners belonging to populations with customs

and traditions very different from those of the West, populations often observed with a sense of superiority and mockery (as is the case, for example, with African populations, whose customs are often described in unflattering terms). "Negritude" appears to be an important element of diversity in these years, which also seem to be intended to initiate reflection on the equality of ethnic groups and respect.

6. Finally, there is a last kind of "foreigner", who inhabits an imaginary world and prefigures encounters with other, fantastic realities that arouse curiosity and fantasy, but also upset the balance of a life devoid of unknowns and mystery. This is the case of the humanity described in the Emilio Salgari's writings or the translations of Jules Verne (which were very popular in the years in question), texts that refer to a desire to escape from reality, almost a projection into other dimensions that can overcome the discomfort with an uncomfortable present. The categories obtained from the extensive reading were used for a more in-depth research that allowed us to identify the recurrences and divergences between texts. The collected passages show a sort of temporal parabola that, starting from Risorgimento's years, reaches the 20th century and its dramatic readings of the "difference". In the first decades of the 20th century, children literature oscillates between patriotic clichés that exalted the memory of a presumed 'Italian race' descended from the ancient Romans and the greats of national history, and the modesty that sometimes appears in particular texts in which a discordant voice is entrusted to animals or objects that become the mouthpiece of a growing and deaf discomfort.

The Ambiguous Concept of Homeland

The idea of "homeland" and the idea of "foreigner" seem to gradually evolve from the Risorgimental heroic enthusiasm towards nationalistic extreme positions that find their evident realization during fascism, but also provoke in many authors a deafening aversion. This has been the epilogue of an era marked by ideals that would not find a clear realization. On the contrary, some texts reveal positions that

transform Risorgimento aspirations into meaningless platitudes. The differences between authors stand out, in particular between those more politically integrated and those who, through the art of irony, attempt a lucid critique of present political thought that does not agree.

The theme of "homeland" dominates in the texts examined: this is a central theme because it is useful for that process of "identity building" that must involve the popular classes still not very sensitive to belonging to the recent nation state. In children's books there are many metaphors used to talk about the country: the homeland is like the family, the homeland is the bride, the homeland is the mother. Foreigners are those who do not live under the same sky, do not speak the same language, do not have the same traditions, they don't belong to the same homeland. "Where there is a family and a homeland with a multitude of men who speak the same language, who more or less suffer common misfortunes and form common vows, there is a homeland" (Thouar, 1848). This is a dominant idea, but it is significant, however, to trace in some texts the perception of a sort of "negative feeling" connected to this. This feeling is linked to an idea of homeland that tends to exclude rather than embrace those who do not belong to the same people. Authors close to the Catholic current, as well as authors linked to Marxist internationalism feel a sort of crack in the idea of homeland. They defend the relativity of the concept of homeland, anticipating in some way the resistance towards a nationalistic vision that will soon result in a few years in the ideology of Fascism.

> Even outside your country there are men. These men do not speak your language, they do not follow your customs; but they have head, body and limbs as you do; they are made like you; they nourish your same affections; like you they suffer from hunger, from cold, from sickness, from soul travails (Parravicini, 1886, p. 27).

Children's literature as well as school books, on the one hand, promotes affection for one's country, but on the other hand defends a broader vision of humanity, which includes feelings of solidarity with anyone who is far from their country.

It is a "weaker" ideological line, present in the pages of the school texts. This idea runs through some of the texts analyzed showing the

most critical part of a process of national unification that proves to be somewhat forced. This reflection returns in later volumes. In 1931, *Ciondolino*, one of the most famous children's novels of the early 20th century, was published by Editore Bemporad in Florence. The author, Luigi Bertelli, known as Vamba, founded in 1906 il "Giornalino della domenica", a magazine for children that was published regularly until 1924 and was signed by the most famous writers of the time (Giovanni Pascoli, Gabriele D'Annunzio, Grazia Deledda, Edmondo De Amicis) as well as the most famous illustrators (Umberto Brunelleschi and Filiberto Scarpelli). Vamba's novel tells the story of a child who, in order to avoid spending a summer studying, asks to be turned into an insect and is granted. He becomes an ant, having the opportunity to observe the complex world of insects. But his vicissitudes in the insects' world are actually a metaphor for human society's life, with its violence, arrogance and misunderstandings in social dynamics. Through the protagonist's eyes, transformed into an ant, some of the paradoxes of human existence become evident. Among them is the lack of solidarity between groups of "different" people, constantly fighting each other, who often pay the consequences of their stance, of their mistrust of others. The "foreigners" that every ant encounters are bitter enemies, animals of other species but also of one's own, incapable of being in solidarity with each other in order to cope with adversity.

> We are today, because of false traditions and false interests, divided into many tribes condemned to war against each other: we do not know the sweetness of hospitality and we cruelly put to death any foreign ant that dares to enter our village. Well, who knows! Perhaps the day will come when all the ants of the world, recognising their old errors and better understanding their interests and their mission, will unite their forces, and, absent the absurd enmities, will become the first people among insects. Then we shall see the most diverse races.

So says the professor of Ciondolino, an old ant who takes care of the training of new recruits (Bertelli, 1931, p. 75).

Likewise speaks a dying ant, assisted by Ciondolino:

> Often I, in the serious meditations of my old age, let myself be carried away by a rosy dream and see far away a greater and brighter future for our people. Today we are, due to false traditions and false interests, divided into many tribes condemned to war against each other: we do

not know the sweetness of hospitality and we cruelly put to death any foreign ant that dared to enter our village. Well, who knows? Perhaps a day will come when all the ants in the world, recognizing their ancient mistakes and better understanding their interests and their mission, will unite their forces, and defeat the absurd enmities, will become the first people among the insects. Then we will see the most diverse races (Bertelli, 1931, p. 75).

These are clear appeals launched by author to abandon rivalry and mistrust towards one's fellows, giving messages of tolerance.

The Emigrant

The same novel contains significant pages about the subject of emigration. Emigrants are a particular category of foreigner, forced to abandon their land in search of fortune.

A remedy was needed, and a ready remedy; it was necessary for the population to decrease, it was urgent that a part of it exiled itself from the homeland, so that the homeland would not perish!'. In this case, it is the bees that set a good example: the queen […] in a sublime gesture of sacrifice exiled herself from her homeland to save it and went to found another colony elsewhere.

Ciondolino himself establishes a comparison between bees and emigrants:

Gigino […] founds in the swarming of the bees a small reproduction of the great history of human races. Obligated by the need for space, air and food, they poured out of their first borders, within which the excessive quantity of living beings made life impossible. And these human torrents, which overflowed everywhere in search of a bed where they could give place to their raging waves, broke and smashed everything that stood in their way and, having found a place where they could finally spread out, pushed away the elements that lay quietly there, which, overflowing in their turn, went on to form other equally raging human torrents. Such was the history of man's invasions, forced, because of their multiplication, to conquer and sow carnage in the territories of others […]. And Gigino, who had read De Amicis' Ocean, found in the swarming of bees a fairer and more modern comparison with emigration. It is no longer the human torrent that bursts forth in

all its violence, but many modest streams that overflow and slowly go their separate ways in search of a place that will welcome them: it is no longer the fatal and irresistible movement of human races, but crowds of unfortunate men who have abandoned their homeland, where they can no longer live, and are drawing to unknown lands, far away, hoping to find bread and work there (Bertelli, 1931, pp. 275-277).

The author tends to appreciate the efforts of those who have left their homeland to enable others to survive. The bees' behavior contains an explicit reference to the emigrant's condition, destined to become strangers in another's land in the name of a sacrifice to their homeland. The reference to De Amicis volume that Ciondolino knows very well gives us the measure of a cultural climate, linked to children's literature, dealing with the difficulties experienced by those who abandon their homeland to seek a better destiny elsewhere.

The complexity of the theme returns in the ironic pages of Carlo Collodi's *Giannettino*, a very significant editorial answer to many contemporary textbooks:

> And when she, discussing nationality, posits three distinctive signs, language, natural borders and common origins, she has said in a few words what the learned have tried to determine in many, and have not always succeeded in doing […]. Borders? And it must be inculcated that God has given us the Alps and the seas; but for a deceitful and vicious people, the mountains are like the hedge of a field, and the seas like a ditch; whoever wants to take us crosses them, and history has shown this. The common lineage, the common origins? For only half a million of non-Latin descent among us, now adopted as our own. And it is really essential to take every opportunity to show the necessity of concord between all the Italian provinces, the strict religious, moral and national obligation to refrain from any insolent boasting, from any silly coyness, from even the slightest offense; because we are alive with blood, we resent each other easily and malevolence is born between city and city, insipient competition of merits, fatal dissension in the army, turmoil in our homeland that cost so much blood and so many tears to free (Collodi, 1886, pp. 5-6).

Collodi underlines the ambiguity of the sense of country exaltation. In 1886, the author had completely abandoned the positive emphasis on the idea of the homeland. In the meantime, colonial wars have begun so as very sad history.

In 1887, in a short story published by Giovanni Lanza, a group of soldiers discusses a possible definition of homeland, during a moment of truce, in the evening, in front of a fireplace:

> Truly the concept of homeland, around which you dispute, is not easy to clarify in a few words […] two things, which in truth make but one, contribute to form the spirit and soul of a nation: the past and the present. The idea, that is, of a common destiny, and the intention to enjoy the inheritance received together (Lanza, 1887, p. 25).

The soldier's words are dominated by the idea that history is the founding element of national identity; history understood as the past, but also as a project for an imminent future. In these years, the future foreshadowed is that of a colonial policy that allows national affirmation outside geographical territories, in the recovery of past events that have been the greatness of Latinity dominating throughout Europe and beyond.

Foreign Lands to Be Conquered

Soon afterwards, the colonization of other foreign countries began. Already initiated in the late 19th century, colonial expansion became a priority national ambition under the Fascist regime. Italy tried to extend its authority in Africa, appealing to the presumed superiority of the Italians, to the need for a civilizing mission that Europeans had to carry out on other continents. Italian colonialism had the same face as all colonialisms: genocide (such as that in the Cyrenaic Gebel), oppression, exploitation of territory and labour. The Italian conquest of Libya, for example, started in 1911 by the Giolitti government and hindered by the resistance of the local populations – especially those living in the inaccessible desert territories – led to bloody struggles time that ended only in the 1930s with the total subjugation of the natives. Education contributes to justify these inauspicious undertakings. In some volumes of these years we thus find expressed the gaze of the Italian, far from the homeland. A biased view, which narrates the encounter between peoples: "whites" and "coloured people", two cultures, two ways of conceiving reality. On the one hand there are order, measure, energy, activism, loyalty, in other words civilisation; on the other hand there are chaos, laziness, passivity and disloyalty.

This point of view generated a stereotype destined to last over the years.

In the following years the territories to be explored become horizons of conquest: imperialist policies are supported by a certain literature that somehow prepared it.

Indigenous peoples are described as savages "in need" of a civilizing intervention. One of the many epochs of colonization that the West has implemented against other people has begun.

> It was then a truly singular spectacle to see men of that size, so massive, giving free rein to an almost childish joy, manifested with puerile cries, with shots, with shaking of the long hair, like foals shaking the mane, finally with wobbling of the butt, as if they had an earthquake underneath. The two friends took advantage of that moment of jubilation to give vent to the great desire to laugh, which for a while they kept in, the case was too new, those attitudes too grotesque, too nice comedy to be able to be serious […] a dozen men got up, disappeared in the pine trees, and soon returned loaded with stuff. One after the other they presented themselves to the two whites, laying at their feet, on the ground, what they carried; and after a prostration they left […] it was a great gift, because they were hungry. They drank the milk, which was good and dense, then they began with the scones. And in the meantime they considered those simple niggers (Ferrero, 1897, p. 207).

Derision, an undisguised sense of superiority, ingratitude. The Abyssinian is an enemy, described as savage, ignorant, cowardly. As well as physical, the devaluation of the Africans is above all moral and military:

> The Abyssinians cannot and will not work. They are in constant war. […] No one pays taxes and everyone steals where they can steal. […] About two hundred years ago, Abyssinia was full of rubber trees, and now these are rarer than white flies. The Abyssinian destroys everything out of ignorance or lets all the wealth of his country be destroyed by himself. The people of Tigre, who inhabit the northernmost province of Abyssinia, live on plunder and are wilfully miserable. People who are not capable of anything and who do not want to train for work. In Abyssinia, for example, clay is abundant, but no work is done in terracotta and the natives adapt themselves to living in wedge-shaped hovels, which only stand upright because the wind does not blow. In fact, there is no trace in Abyssinia of any rudimentary form of human industry. […] No work, no hygiene; their existence is based on filth and thievery.

If looting and pillaging do not bear fruit, or too little, the Tigre is subject to terrible famines and pestilence. The tribes of the Borgos, the Mensa and the Samar are regions populated with all kinds of game, which is an excellent food for all peoples: the Abyssinian prefers to starve rather than take up a gun to go hunting. So the Abyssinian hordes go out of their territory and raid the area around Massawa, where they know the Europeans have food stores and plenty of livestock. To spread civilisation among these people is a dream (Tenente anonimo/Anonymous Lieutenant, 1935, pp. 24-27).

Colonial literature obviously abounds with similar passages. In other texts, on the other hand, sympathy and pity towards African peoples emerge, sentiments which nevertheless reveal a substantial distance.

The novels mentioned, and other such as *Nonno Ebe*, *Africanelle* and similar were published in 1936 and 1937, close to the publication of the *Manifesto degli scienziati razzisti* (Manifesto of Racism) drafted by some Italian intellectuals on behalf of Mussolini (among them Guido Landra, Lidio Cipriani, Arturo Donaggio, Sabato Visco, etc.) and published on the front page of the first volume of the magazine "La difesa della razza", which lasted from 5 August 1938, until June 1943. The positions and roles of the promoters and authors of the articles in this magazine leave no doubt as to the total subservience of science to Fascist policies. If the theme of "Jewish race" is central in the published pieces and represents the magazine's primary aim, there is also the theme of the African populations inferiority, with explicit references to physiognomy, physical traits, as well as "spiritual" and cultural differences. It is an attempt to assign scientific value to a prejudice that has lasted for years and is now fuelled by new political opportunities.

Conclusion

The examples given, which are only a hint of the deep work that has been carried out and shown in a volume published in Italy by Tab Edizioni, with the title *Lo straniero di carta* (authors Alessandra Anichini, Pamela Giorgi, and Irene Zoppi for the iconographic part), serve to support the synthesis that we are trying to draw briefly.

Two key concepts emerged from the survey, made evident by the examples identified. The first is linked to a basic ambiguity inherent in the very concept of homeland. A concept that, starting from the years of the Risorgimento, experiences a sort of upward parabola in the following years, oscillating between the rhetoric of an imagery that incites young people to support national independence, nourishing their pride, and the awareness of those who recognise and fear the support and self-sacrifice towards the homeland as the beginning of a period of conflict for the affirmation of it outside its national borders, as justification for an idea of colonization that connotes the first decades of the 20th century and will then continue in a dramatic way throughout the following decades. This awareness has been present in many authors. Veiled by a bitter irony, it founds expression in some texts for children and young people. This is the first strong idea of our research, the co-presence of an idea of homeland as a search for political and cultural autonomy and, at the same time, as a potential "trap" for triggering hatred and conflict.

Alongside this, we have been able to explore an idea of the foreigner which, rather than being associated with individuals who live in or come from another country, or speak another language, seems to connote a sector of humanity that live an existence on the margins, far from middle-class society, often characterized by destitution and poverty. A foreigner is thus someone who is different, but not only because he or she has other customs and habits, another history, but rather because he or she is far from the commonly accepted life. He is a foreigner insofar as he does not contribute to the economic development of his own country and in some way constitutes a threat to the reassuringly flat life of Italian bourgeois society. Foreigner and poor, foreigner and exile, foreigner and miserable thus often become synonyms, in a literary panorama that oscillates between pity, indifference and contempt. A distance, however, also marked iconographically, through images that describe two different ways of living, two distant and clearly marked conditions.

Foreigners, pilgrims, merchants and travelers… Children's literature such as textbooks published in years we considered strongly contribute to creating a stereotype that was profoundly influenced by the politic: education in welcoming, tolerance, in the name of "the common race", but also, on the contrary, education in rejection, intolerance in the name of a "patriotic" sense of identity that

is deemed indispensable for building and strengthening the idea of "patria".

The numerous "didactic" descriptions of the diversity that we offer, taken from volumes of great diffusion in the years in question, were always aimed at teaching children how not to be different, or, at best, how to re-enter the established order even if they are. What we offer is a brief survey on imbalance, inequality, asymmetry that allows the study in depth of a specific point of view (the text for children) the concept of discrimination generated by nationality, social condition, sense of race.

In his essay *The Stranger*, Alfred Schutz defines the stranger as "an adult individual of our time and our civilisation who attempts to be permanently accepted or at least tolerated by the group he approaches". This definition indicates a condition that is first and foremost psychological and seems to be independent of origin and ethnicity. Feeling foreign means perceiving the difficulty of others in accepting us, it means feeling one's own difficulty in attempting to belong to a community. This very general condition is experienced today by many, for different reasons, by social condition, by origin, by provenance: it is a problem that has an old history and we have tried to tell a small fragment of it.

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31.
Ancient Textbooks or Manuals and Their Themes. Gender Issues and Stereotypes in Textbooks

Irene Zoppi[*] and Valentina Pedani[**]

ABSTRACT

In this research about "Gender issues and stereotypes in textbooks and in learning materials", the research group analyzed the representation of the feminine and masculine in Italian textbooks and in learning materials with the aim to promote gender equality in educational and school setting. These representations often suffer from socially constructed roles and create formative self-segregation and horizontal segregation. ["It is understood as under- or over-representation of women or men in occupations or sectors, not ordered by any criterion. This contrasts with vertical segregation, which concerns the top of an ordering based on 'desirable' attributes such as income, prestige, etc.", EIGE, European Institute for Gender Equality, horizontal segregation | European Institute for Gender Equality (europa.eu)].

KEYWORDS: *Gender stereotype, Textbook, Representation.*

Introduction

The INDIRE research group has developed tools and innovative gender-oriented teaching models for in-service teacher training and explored school contexts to find good practices of gender equality to disseminate in the schools.

The framework of the research on Italian learning materials refers to the scale of gender bias elaborated by Biemmi (2010), based on these elements: number of female and male protagonists; gender stereotypes and jobs (careers); gender stereotypes and physical environments (indoors and outdoors); adjectivizing (description of) physical appearance and behavior by gender.

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In the first phase of our work we explored some contemporary Italian textbooks for elementary school. This was a texting phase, for future investigation on a large number of published textbooks. Concerning images it can be noticed that there are only mothers accompanying their children to school and that the first day of school is a hard one for mother. Furthermore, the girls play at home with their dolls, the boys have fun outdoors; women cook with their chef's hat on, men play their trumpets and snorkel deep in the water. As far as text and language, in an exercise for student "What moms do" there is the possibility to choose only among these actions: ironing, sewing, washing, cleaning, cooking, polishing, kissing, praying, caressing, spanking, reading to their children. These forms of representation are anachronistic as very often, today, mothers come home late from work and fathers do the cooking or clean the house.

The research in written and audio-visual learning materials aims also to find good practices of gender equality to disseminate trough "peer to peer" education and it is based on these indicators:

- Working in educational continuity, to promote gender education in daily teaching and in all school orders.
- Being and characterising itself as a gender-oriented learning community.
- Employing monitoring and self-assessment tools such as the Gender Equality Charter by OXFAM Italia, that is an important tool for the schools to assess their position on achieving gender equality.
- Cooperating with other stakeholders at local level such as anti-violence Centers. In Tuscany, for example, there is the regional network against gender-based violence, which operates in schools.

The research group is currently developing a teacher training project called PARtime (a cooperation between INDIRE and Tuscany Region) focused on:

- Analyzing and detecting stereotypes and gender violence in books and school environments.
- Studying gender-sensitive language.
- Spreading and supporting innovative teaching methods such as Coding and Educational Robotics to deconstruct gender horizontal segregation and overcome obstacles that may prevent female students from attending STEM courses.

Innovative teaching methods make it possible to create non-formal opportunities to approach scientific disciplines, to go beyond transmissive teaching, to increase the possibility for students to act and rethink themselves in the school environment.

Historical Survey on Iconography

Part of the research focused on searching the INDIRE antiquarian library, dedicated to juvenile literature, tracing the iconography and possible stereotypes linked to the topic of the "foreigner" in all its possible different meanings, including in this category the representation of the female.

The books and documents taken into account, were all specifically designed for young people, with the primary purpose of instructing, but with an eye to the idea of making reading and learning a pleasurable activity, mainly through illustration. Therefore, illustration is a communicative mode which is not secondary at all and, in the Italian editorial production of the mid-19th century, had already gained a great importance.

A necessary premise, in that in Italy, until the end of the 19th century, there was no literature of any kind specifically designed for children, and therefore not even a dedicated production of illustrations: the texts were translations of works written by foreign writers and pedagogists, in particular French, English and German authors. In our collection we found several texts where the editor decided to reuse illustrations. It is a phenomenon already pointed out by relevant bibliography. Editors bought reproductions of prints and engravings on foreign markets and then adapted and reused the pictures in one or more of their publications.

Our study moves from this assumption: in many cases, the writer, when producing his work, had no intention or idea of putting pictures in the text. Therefore he didn't provide the pictures that the readers would find in the final text with a specific meaning.

It was instead the publisher who edited and composed the book who added images, assigning them a meaning and a value. Furthermore, it is obviously necessary to bear in mind the historical and social context where both texts and images were born and the intended

audience and remember that the volumes of the INDIRE collection are dating in early 19th-mid-20th century.

In this iconographic research, I tried to identify some categories – part of which were already introduced by Giorgi and Anichini – that define "the stranger" or "the estrangement" in a broad sense, moving from multiple perspectives from which this situation can be intended of felt: suffered, chosen, observed, denigrated, self-reported, even in a metaphorical sense.

Among the categories Giorgi and Anichini have already mentioned, there is the "migrant", a person who moves for political, but also family, and economic reasons. In this context there are recurring images of the "fragile", stereotyped in the figures of: children, orphans, war widows.

There is also a gender perspective on this topic which, as we shall see further, will also emerge in other "categories" traced.

The forced departure from one's own country or territory, also concerns those who have to move because of their job: for example,

Figure 1. Cordelia (1896), *Piccoli eroi*, Milano, Fratelli Treves editori, drawing by Arnaldo Ferraguti.

transhumants or merchants, pushed by economic and subsistence needs. We can find this type of characters and the related illustrations in stories and short stories, often located in a family environment and written in first person, in diary form, and therefore with a veristic tone. It is a type of literature that was meant to provide an educational and moral example for young people (Figs. 1-2).

Avvolto in un vecchio sacco il bambino dormiva tran-
quillo sul seno della madre. . *(Pag. 5).*
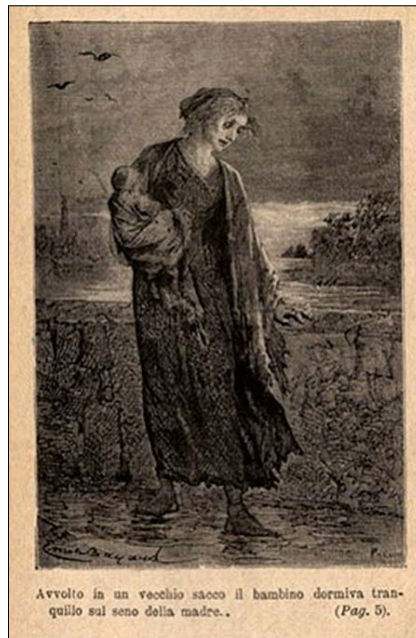
Figure 2. Anna Vertua Gentile (1884), *Poveretto; La rosa: racconti*, Milano, Libreria di educazione e d'istruzione di Paolo Carrara, drawing by E. Bayard.

Here we can highlight once again the relevance of "gender perspective", as Italian publishing, until the end of the 19th century, produced some series (editorials) specifically tailored and dedicated to the two sexes. For boys, the so-called "Plutarchi", with reference to Plutarch's "Parallel Lives" in which they would find stories of heroes and valiant characters from the past. For girls, the "manuals for young womens" with stories that praised the domestic, maternal, religious and civil virtues to which a young woman should aspire. The illustra-

tions that are chosen for these texts highlight dramatic and emotionally engaging aspects, and underline in particular the expressiveness of the characters for which the gender also corresponds to emotions, behaviors and culturally determined roles that are attributed to them (male: strength/action/cleverness, masculine is the character, for the example, of the "soldiers" or of the "intellectual". Female: passivity/fragility/sensibility; is the character, for the example, of the mother, wife or housewife) (**Figs. 3-4**).

Figure 3. Pietro Fanfani (1875), *Plutarco per le scuole maschili*, Milano, Libreria di educazione e d'istruzione di Paolo Carrara.

The topic of becoming a "foreigner", a "stranger", can also pertain to another figure: the traveler for passion, the bourgeois traveler, who moves by his own will, and is not compelled by necessity. This attitude also defines the characters of the explorer and the scientist, who travel for study and research. The "traveler" in this context is a person who observes a new world that he discovers and investigates

Figure 4. Ida Baccini (1893), *La fanciulla massaia: libro di lettura per le scuole elementari femminili superiori*, Firenze, R. Bemporad & Figlio, drawing by Enrico Mazzanti.

with his "own point of view". To be more precise, in the texts that we examined, it is a "Western point of view". The observer does not perceive himself as "stranger" to the other:

He rather looks down to the people he meets as an object of curiosity and, sometimes, derision. The texts and illustrations highlight this in various ways: both insist on typical details (clothes, hair, somatic features) or place the natives in the background, subordinating them to the "protagonist". The position underlines a distance that is not only physical, but metaphorically, also a social distance (**Fig. 5**).

The "foreigner" is also a person belonging to a different ethnic group. We find the representation of ethnic groups as early as the mid-19th century, in some illustrated dictionaries, published for young people. In these texts, different peoples, cultures, civilizations or ethnic groups and the terms related to the specific context are often accompanied by small, very detailed illustrations. We can find the
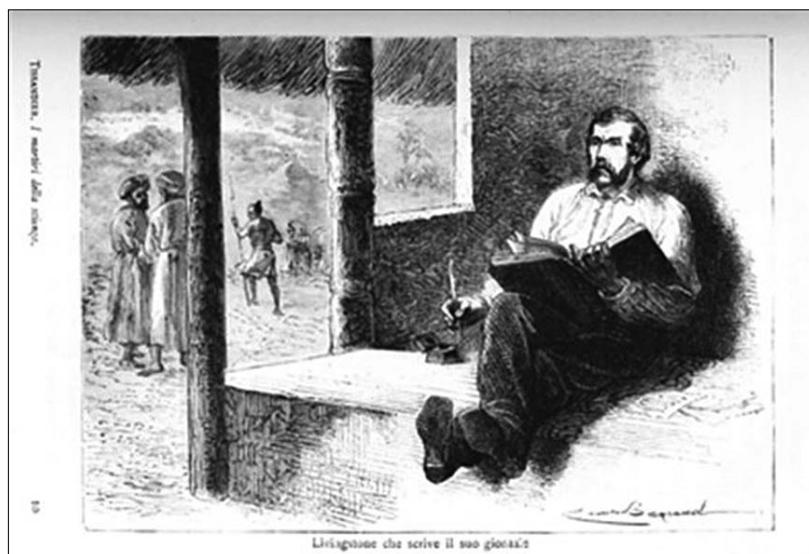
Figure 5. David Livingstone drawing by Emile Bayard. Gaston Tissandier (1884), *I martiri della scienza*, Milano, Fratelli Treves editori.

same level of attention and detail both in the pictures and in the text. Both, text and images, describes some specific elements: for example, their rich and particular clothes, the original and "funny" exotic hairstyles. Other peculiar elements highlighted both by the literal and figurative descriptions are the complexion, the skin color, the shape of the skull and the size of the bodies of the different ethnic groups. These human figures are often drawing placed frontally or from one side: an approach which is derived from anthropology texts of the same period, which should not be interpreted as deliberately denigrating styles (**Figs. 6-7**).

We find an example of education to the concepts of "ethnicity" and "race" also in the well-known Giannetto by Parravicini (**Fig. 8**), one of the best known examples of nineteenth-century Italian children's literature, published in 1836 and acquired by Italian schools as a reference text. The book has some pages and illustrations dedicated to ethnic groups with the aim of suggesting: "to the young reader the idea of the existence of a clear hierarchy of 'civilizations' between the different populations".

Figures 6-7. Illustrations for the words "Albania" and "Races": Nicomede Bianchi (1863-1865), *Dizionario di cognizioni utili specialmente alla studiosa gioventù italiana d'ambo i sessi*, Torino, Unione Tipografica Editrice.

Figure 8. Illustration in the chapter "Main varieties of the human species" shows the "third variety, the Ethiopian" next to "Mongòla" one. From L.A. Parravicini (1886), *Giannetto*, Milano, Dabalà e Casaccia.

Figure 9. Harriet Beecher Stowe (1909), *La capanna dello zio Tom*, Milano, Società Editrice Sonzogno, drawing by A. Gaillard.

An element that the illustration highlights in the representation of ethnicities, it's the contrast between the nakedness or semi-nudity of the indigenous people, and the clothes of the civilized white man. Even when the illustrated characters wear clothes, the garments can also play a graphic role in emphasizing the color contrast between the light tones of the fabric and the dark ones of the carnate underlining their "Negritude" ("Blackness"). This element is emphasized – perhaps involuntarily – also by the typographic rendering, in which sometimes the consistency of chiaroscuro (light and shadows) is totally lost in favor of flat and deep fields and backgrounds (Fig. 9).

Another recurring representation concerns the character of the "marginalized", as a stereotype of an alien, a misfit, a social outcast in a society in which he is not completely "integrated": in this context, stories and illustrations recurrently present as characters the figures of beggars, street artists, acrobats OR poor, disabled, psychotic. Here, too, we find cultural and gender stereotypes. For example, the acrobat, like the circus performer, is an itinerant artist, and his representation is closer to that of a rogue than to that of an artist, because his low remuneration does not provide wealth and consideration in the community. Among the "fragile figures", the female one is recurrent: especially when related to physical and mental weakness, it is represented by figures with an exaggeration of expressive and physiognomic deformations (Figs. 10-11).

The concept of "stranger" is interpreted in a metaphorical sense in fantastic or surreal stories: the physical estrangement (sometimes with real physical 'transformations' of the protagonists) is a metaphor for the emotional transformation of the characters, and their passage from the world of children to the world of the adults. A certain degree of stereotyping can be seen, therefore, in the representation of "childhood" itself, as a moment of naivety and vulnerability. In this regard we can certainly mention the fables of Little Red Riding Hood, which is present in the INDIRE's fund in an italian edition with illustrations drawn by Gustave Doré (Fig. 12), and certainly Pinocchio that appears in the same library in a number of different editions illustrated by various Italian painters.

Figure 10. "The poor blind man", drawing by Enrico Mazzanti. Ida Baccini (1889), *La terra, il mare, il cielo: libro di lettura per le classi elementari*, Firenze, Felice Paggi.

Figure 11. "The crazy lady", drawing by Enrico Mazzanti. Massimina Rosellini (1877), *Raccolta completa dei dialoghi e racconti pei fanciulli*, Firenze, Felice Paggi.

Figure 12. "Little Red Riding Hood", by Gustave Doré. In the Italian edition of C. Perrault, *Il libro delle fate*, Milano, Tipografia Editrice Lombarda, around 1880.

However, we can also find Italian stories of a later period that made the history, not only of publishing, but of Italian illustration too: such as *Memorie di un Pulcino*, *Ciondolino*, or *Fiammiferino*, specially illustrated by artists (Enrico Mazzanti, Attilio Mussino and Mario Pompei) with a realistic depiction of its figures, but with clear allusions to an imaginary world. In these examples we still find stereotypes related to childhood's psychological and behavioral characteristics, differentiated according to gender. We can see that in the illustrations where the masculine is associated with philosophical thought, physical action and combat, while the feminine embodies the virtues of kindness, loyalty and beauty and is associated with care or passivity in need of salvation (**Figs. 13-14**).

Figure 13. Luigi Bertelli (1931), *Ciondolino: libro per i ragazzi*, Firenze, R. Bemporad & Figlio, drawing by Attilio Mussino.

Figure 14. Ida Baccini (1877), *Memorie d'un pulcino: libro di lettura*, Firenze, Felice Paggi, drawing by Enrico Mazzanti.

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7.
EARLY CHILDHOOD (0-6)

32.
Consumption in the Canary Islands by Children Aged 3 to 6. Testimonials from Families and Teachers

Cecilia V. Becerra Brito[*]

ABSTRACT

Nowadays, digital tools and touch-screen electronic devices are easily accessible to the younger generations. The preferences and evaluations of Digital Educational Resources (DER) by families and teachers influence this consumption. This study aims to analyse the testimonies offered by both groups, whose duty of control significantly affects children aged from 3-6 years old. The information was collected through telematic semi-structured interviews that allowed transcription and analysis through matrices. Six sessions were carried out with three groups of family representatives and three groups of teachers with different levels of technological inclusion. These groups, which are made up of three to eight members, provided the Canary Islands (Spain) perspective. Results reveal that awareness of the possible effects of poorly regulated consumption is not related to actual use and the fact that families and teachers do not have enough tools to control screen exposure time. Furthermore, both groups are unaware of the consequences of DER over-use; they classify any digital material as educational, and there seems to be no agreement on which group is responsible for children's DER use. In conclusion, digitization has found a society without the tools to control the long-term effects that it can produce, which are already being witnessed.

KEYWORDS: *Consumption; Early childhood education; Digital Educational Resources.*

Introduction

Given that technology and digital formats have invaded our lives in recent decades, it is not surprising that something similar has happened in childhood education. The availability of technological devices at school and in the home implies they are also within reach of children aged from 3-6 years old. However, those who regulate and control children's consumption are the adults around them, in this case, their families and teachers. Therefore, it is worth asking: What

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training or knowledge do families and teachers have? Do they know how to differentiate between educational and entertainment resources at this stage? Do they have adequate strategies to control consumption? Are they aware of the possible consequences of these resources being overused? As well as, Is the level of use of young children influenced by their elders' knowledge of the potential adverse effects? Which group is responsible for children's use and development of digital competence?

Section 1 – Theoretical Framework

The introduction of Information and Communication Technologies (ICT) and the resulting Digital Educational Resources (DER) in education raise specific questions that seem to have been neglected in the rapid advance towards digitalization that we are witnessing. Even more so at the pre-school stage.

Once we have learned to walk and to make ourselves minimally understood, the infant stage, from 3 to 6 years old, is a period of development that could be considered unique and extraordinary, where discovery, learning and socialisation are of great relevance. Children are often said to be like "sponges" because they learn from almost everything, especially at this age. So, in this context, what is considered a digital educational resource or DER?

A digital game based on sorting items into one line so that they disappear, obtaining a reward such as points, then going up a level or passing to another a stage, if used by an adult, would be considered an entertainment resource. However, in the period for 3-6-year-olds, these games would be viewed as a way to develop hand-eye coordination and fine-tune psychomotor skills and to teach how to associate, classify, and order, among other positive effects. With due justification, what for adults is a digital entertainment resource could be considered a digital educational resource for children. Practically, any digital resource could fulfil this "educational" function.

However, Alberola-Mulet *et al*. (2021) identify DER as "resources designed for educational purposes, published in a digital format". In other words, they are materials created and designed for this sole purpose from the outset. This subtle but essential difference initiates

the question of what families and teachers specifically mean when they say that they make use of this type of resource.

When children use DER, the type of guidance and support they receive is also relevant because using DER individually or in company seems to affect children differently. For example, Guernsey (2017) describes a study that concluded that co-viewing and guiding children using ICT to be more beneficial to their learning process than using it individually or not using it at all. This situation is understandable considering the social interactions and the support and reinforcement applied in these situations.

With appropriate use, technology can be associated with certain benefits. However, according to Caldeiro-Pedreira *et al.* (2021), its overuse can cause adverse effects in childhood such as sleeping problems, temper tantrums, attention deficit, inadequate mealtime routines, and lack of parental control, which allows viewing of content not intended for children, to name just some of them.

In the home environment and considering the current needs of the society of which we are a part, it is a reality that both ICT and DER are welcomed and used to help reconcile family life. Nowadays, when teleworking must be combined with childcare at home, it is more necessary than ever to educate families to help them take advantage of the educational potential of these resources (Grané I Oró, 2021) and use them in educational practices that are beneficial for their children.

Even though the development of digital competence in the pre-school curriculum has been present for many years, with the educational regulation that has recently taken place in Spain, the new pre-school curriculum now puts a considerable emphasis on developing it. Considering that using ICT in the classroom has been going on for some time and teaching staff make use of it, it is necessary to differentiate the passive use of ICT and DER from their active use because even though teachers integrate technology into the classroom, in some cases, they do so with certain pedagogical deficiencies (Sánchez-Vera, 2021). Thus, using digital educational resources for students to observe their projection (passive use) does not have the same effects as allowing children to interact directly with them based on their learning pace, sharing the experience with their peers and with appropriate guidance (active use).

Given that the factors described above can significantly impact children, it is interesting to determine the type of use that takes place and the perceptions of those who control such use of technology.

Section 2 – Methodology

The qualitative study addressed in this paper is based on two research projects, one national and the other regional, entitled "Los materiales didácticos digitales en la Educación Infantil. Análisis y propuestas para su uso en la escuela y el hogar, RTI2018-093397-B-I00" (Digital Teaching Materials in Early Childhood Education. Analysis and proposals for their use at school and at home) and "Infancia y pantallas digitales: Análisis y propuestas para el uso educativo de las TIC en la escuela y el hogar en Canarias, ProID2020010074" (Children and digital screens: Analysis and proposals for the educational use of ICT at school and at home in the Canary Islands). Data collection and analysis were carried out by the research group EDULLAB, Laboratorio de Educación y Nuevas Tecnologías (Education and New Technologies Laboratory).

Six interview sessions were undertaken as part of these projects, half of them with three groups of parents of children in the second cycle of early childhood education and the other half conducted with three groups of teachers of the same educational stage but corresponding to different types of centers: State, private, and subsidised. The groups consisted of 3 to 8 participants. In all cases, the aim was to have profiles with different levels of technological integration in their daily routine. In total, 16 family representatives and 18 pre-school teachers were interviewed.

Experts in the field of Education and Technology from three Spanish universities validated the design of the semi-structured group interviews. The interviews took place between April and July 2021 through telematic means. The testimonies obtained were transcribed and analysed through matrices using categories and codes.

The results and the vision presented here are based on a comparative study of the information from the two groups, the purpose of which is to reflect the level of coincidence between the opinions offered by parents and early childhood education teachers. In short,

this study focuses on comparing the perspectives of both groups once information has been collected on the use of Digital Educational Resources (DER) both at home and in the educational context of children aged 3 to 6 years old in the Canary Islands, to understand the differences in perceptions and the use that takes place in the school and family environment.

Section 3 – Results and Data Discussion

a) *There Is No Apparent Difference Between Which Digital Resource Is Considered Educational and Which Is Not*

When families and teachers were asked about the DER they use, their answers reflected the wide range of resources both groups include under the precept of "educational". Early childhood teachers mentioned blogs, websites, presentation and worksheet/document creation software, digital books, online video platforms, instant messaging applications, various Apps, educational robotics, typing, video conferencing platforms, application packages for online work, video editing software, electronic devices, augmented reality, escape rooms, and even social networks. Families referred to DER such as videos or apps concerning currently very famous children's characters, websites, apps to learn hygiene routines and cooking processes (such as pizza or cupcake making games), photo and image viewing, and online video platforms (mentioning several specific channels), online TV platforms, digital app shops, craft videos, Smart TVs, video calls and image recognition apps.

Evidently, and under the premise explained in the theoretical framework, the term 'educational' is used in a general way, and there is no clear differentiation between which digital resource is helpful for children's education and which is not. Teachers mention some purely educational resources but also include programmes or applications that they use to generate digital materials that are mainly for passive use or will end up being printed. On the other hand, families should consider that if marketing and advertising are added to all these re-

sources, what are their children learning? For example, many of the videos or channels mentioned incite consumerism, with advertising integrated into their viewing. On the other hand, both groups seem to think that children learn as long as they watch something, without considering the consequences of using media and the ethics behind the messages to which children are exposed.

b) Some Families and Teachers Do Not Have the Necessary Tools/Time to Control Consumption and Seem Unaware of the Consequences of the Overuse of These Resources

The testimonies given by the teachers reveal that they positively value effects like the motivation and attractiveness of the DER for their pupils at school, the variety they offer, that learning is faster with them, and that their pupils enjoy recording themselves. Teachers expressed the fact that the only negative consequence was that children find tablets boring when they are no longer a novelty. Although the importance of not using ICT and DER too much is also mentioned, according to one statement, more DER should be used in class to motivate children.

As one of the families (F02) put it, they use DER as an "electronic babysitter" while teleworking or driving. Another person (F03) talks about the need for parental control systems but does not know how to access and use them and worries about being a role model because they work from home and spend many hours in front of the computer. A third testimony (F05) mentions carrying out a sporadic accompanying role as the child is exceptionally autonomous within online video platforms and that there is no parental control system nor time or content restriction. A final statement in this respect (F09) states that they agree that it is necessary to be a guide and companion, but often they have neither the training nor the time required to do it.

In both groups (teachers and families), the knowledge about harmful effects or consequences is minimal, and the use of this type of resource seems to be overvalued as if children did not need a guide and companion to benefit from them. In addition, children consuming screens and DER independently leads to a lack of control over the time and content they are exposed to through such digital tools.

c) Family's Awareness of the Possible Adverse Effects of Poorly Regulated Consumption Is Not Directly Related to the Actual Use in Practice

Conducting this qualitative study has the disadvantage of adhering to the testimony or statement without questioning it, but when having to speak for a certain period reveals certain contradictions. An example of this is F03, who, although they initially said "at most, they should be used between one and two hours" (referring to child exposure to the screen), when continuing with the interview, they reveal the following:

> In my case, what my daughter likes the most is the Smart TV. In fact, it is new, and she learned to use it before me. So she started with trial and error. She searches YouTube on her own and uses Netflix. (…) But I still haven't figured out how to put the child censorship on it, and she uses Smart TV quite well, then there is my mobile, sometimes I lend it to her when she goes in the car, and she knows how to use it too, she knows how to use it quite well. She is a digital native, she knows how to take selfies (she takes them herself, with poses I don't know where she got them from), and she's only five years old.

While this family member is aware that their child should only consume one hour of ICT and DER per day, if all the moments of use are added together, this one-hour maximum is likely exceeded. Also, the lack of parental protection software and the fact that the child even knows to take selfies may be indicators of the underestimation of these possible negative effects, whilst being proud of the child's technology skills.

Another example is participant F04, who uses screens as a reinforcement/reward to get them to do an activity, but at the same time, specifies:

> I have set timetables because otherwise, because of them [referring to DER], they would be there all afternoon. (…) They are even aware that "oh, I've done my homework, I've been good, I've collected everything, please can you let me have the tablet?" (…).
> I reward her with what she likes the most. That's what I tell her, so "Ok, half an hour", and then it's hard for me. It's always a little more than half an hour (…).

> Anything in excess is wrong, we live in the age of technology, and we can't hide it from them. And from the age of 0 to 6 years, the brain is the most important thing, the essential connection with all that is studied and proven. Therefore, you can't deny them the progress they will make in their day-to-day life (…).

Thus, despite perceiving the addiction produced by using ICT and DER in their children, who even try to behave well in order to use them, and how difficult it is to disengage them, they consider them essential for cognitive development.

d) *There Is No Agreement on Which Group Is Responsible for Children's Use of Digital Educational Resources and Their Level of Digital Competence*

According to pre-school teachers, passive use, mainly related to watching videos and entertainment and gaming applications at home, and the low level of digital competence observed in some families, hinders the didactic use of devices and DER. Some testimonies state that when they carry out digital learning activities with their students, the children lose interest when they realise they are not going to play with the tablets. Didactic use is not as attractive as the playful one.

A family representative (F08) explains that they have tasks such as recording and presenting a story, understood as an easy task that families can carry out but not being the case for all families. Supporting this idea, F10 says there is little training, difficulties, and resistance to being able to help because, as they do not know how to do it, they do not want to waste time doing it either. F12 also lacks training regarding the child's guidance in using digital resources. Finally, F15 refers to the need for education in using technologies and the knowledge to select resources and contents.

In other words, at school, it is observed that pupils are accustomed to the fun use of technology at home, which interferes with their interest in the didactic and educational use of DER, but when pre-school teachers send home tasks that require the use of DER, families have difficulties in making use of specific devices or Apps and are not capable of carrying this out. Moreover, the lack of digital competence or the parents' lack of skills in using some DER implies

that children mainly use these resources in the family context individually and for entertainment. At the same time, the use of DER in the school context is not so attractive for those children who are used to playing games.

Families want their children to develop digital competence because they consider it relevant these days, but this is assumed as the school's responsibility. On the other hand, some teachers claim to have trained families in using specific DER at home, but, even so, the availability (or not) of a specific time to dedicate to their children in supporting this use is a factor that significantly influences this issue.

Conclusions

At the 3-6-year-old stage, the educational potential of DER seems to lie not so much in the purpose of its design but in the accompaniment, guidance and use for learning about virtually any digital resource (whether created with an instructional purpose or not). In this way, the definition of DER by Alberola-Mulet *et al.* (2021) encompasses a broader aspect at this specific stage.

Even without the necessary accompaniment and monitoring, the benefits of including DER in childhood, as perceived by families and teachers, outweigh the possible adverse effects they know. Perhaps families should be guided towards the practices mentioned by Guernsey (2017), the adverse effects mentioned by Caldeiro-Pedreira *et al.* (2021), and how to set and limit screen time and strategies for controlling the content to which their children are exposed. Could it be a lack of knowledge or "overly" optimistic thinking?

Even though DER are perceived positively, there are practices in households that could be improved to promote the comprehensive development of minors with these technologies, in line with Grané I Oró (2021).

Given that the new regulation includes the development of Digital Competence in the pre-school stage, teachers will need some training to integrate DER into more beneficial pedagogical dynamics to compensate Sánchez-Vera's (2021) findings, and families will need more significant support, guidance, and advice.

The limitations of this study include the size of the sample, the profile of those who took part in it (the mere willingness to do so indicates interest and concern about the subject), the availability of technological resources at home and school, and even the time families devote to their children (the difficulty of reconciling work and family life may influence the level of technological consumption by children).

These conditioning factors, together with the conclusions obtained, highlight the need to continue exploring the daily practices that are carried out. It is therefore necessary to determine the optimal actions regarding screen consumption for children's integral development at school and at home.

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33.
Digital Materials as a Support for Stories in Early Childhood Classrooms

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ABSTRACT

The possibilities offered by technologies at school, in a society immersed in an unprecedented technological revolution, are numerous. This text describes, with an action-research approach, the experiences developed within the framework of a project in which various agents were involved. The school becomes a dynamic centre, the axis of empowerment and learning processes. Through storytelling, the word was given to associations, traders, family members, teachers and children. Visibility of the work was achieved by exploiting the potential of networks.

KEYWORDS: *Neighborhood; Storytelling; Technology.*

Introduction

Narrative has always occupied an important place in educational processes because it can nurture the intersection between our deepest memories and the ways in which we see the world and reality. It is through storytelling, listening and sharing that people attribute meaning to their personal and collective experiences. Calvino (2017) said that knowledge of others is special in that it necessarily implies knowledge of oneself, and not only knowledge, but also understanding. Storytelling presents itself as a space for research, for building relationships, for sharing with one another.

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At the same time, narration is an act of interpretation (Bruner, 2003) because we always structure it from a particular perspective, painting a particular picture of life and the human condition, thus finding our own meaning. Through narrative thinking, different experiences that are distant in time or space, experienced directly or simply heard, can be related to each other and gathered into a story that interweaves different cognitive, emotional and relational dimensions.

Narration is an intentional act with a powerful pragmatic and communicative force (Bruner, 2003), an intersubjective act between the narrator and the receiver, in which the shared and differentiated aspects of a story are explored and recognised. In this sense, narrating is an action that co-generates knowledge.

Reflecting on the meaning of narration in the field of education allows us to re-elaborate experiences by describing a context, understanding it in relation to the intentions of the protagonists, and constructing meanings that intertwine and mutually enrich each other. In this sense, storytelling can be seen as a method, which implies the need to teach and learn the different ways of listening and narrating about oneself, others, and the world.

Storytelling can adopt a plurality of channels to express feelings and emotional experiences: it is communicated, it is spoken, it is sometimes consciously experienced through the body, through movement, through verbal and non-verbal language, and in other cases narrative creativity is supported by the great communicative potential of digital media, which creates and recreates new and different narrative contexts.

In today's society, education systems at different levels face the difficult challenge of responding to emerging needs such as: encountering otherness, fostering experiential learning, co-participating in the social space of a group, or paying attention to special educational needs. These challenges involve all the actors in an educational space who, by tracing, mapping, and connecting the elements of the multiple challenges of education here and now, use storytelling as a tool to explore, analyse, and reflect on the forms that our experience in the world can take.

Based on these needs, the "Explora conmigo donde vivimos – Explora el Cabanyal" project aims to design a dedicated space to promote educational activities and practices through digital storytelling strategies at the pre-Primary Education stage (3-6 years).

More than 200 students from four schools in the region of Valencia took part in the initiative with the objective of giving meaning and significance to their own experience, outlining interpretative and prefigurative coordinates of events and situations and, based on this, constructing forms of knowledge to guide them in their actions. The reflections and categorisations developed result in a theoretical and practical framework for the use and evaluation of digital media, in line with the objectives of the research project: Infancia Digital. Los materiales didácticos digitales en la educación infantil (RTI2018-093397-B-I00).

Considering these premises, an action-research project was promoted that included the planning, design and production of digital narratives that were published on https://sites.google.com/view/explora-conmigo-donde-vivimos/el-proyecto.

The initiative was conceived as an opportunity to foster the meeting of cultures and the implementation of digital practices aimed at promoting creative and narrative potential, cooperative learning and communication. The initiative explores and analyses the use of digital technologies to create and share stories and, more specifically, examines the ways in which young children create narratives by interacting with technological tools.

"Explora conmigo donde vivimos – Explora el Cabanyal" is a multidisciplinary collaboration supervised by a group of researchers from the University of Valencia with experience in projects in digital educational practices. The production of the narratives, conceived as a device providing different competences, is based on the collaboration of the educational communities and numerous groups from the neighbourhood of El Cabanyal, including illustrators, neighbours, artists and parents' associations. All participants were engaged in the creation of visual stories about the architectural heritage and the social, cultural and historical identity of the neighbourhood. Participants were able to develop skills related to research, identification, evaluation, organisation, understanding, use and management of information in the digital environment, through the exchange and approach to local cultures, traditions and popular knowledge.

El Cabanyal is the name of a historic coastal neighbourhood in the city of Valencia (Spain). This unique and picturesque territory originated in the 15th century as a fishing village and its urban planning, with buildings in the modernist style, is its most distinctive architectural feature. The neighbourhood was declared a National Historic

Cultural Asset in 1993 and in June 1998, the Valencia City Council, governed by the Popular Party, approved the Special Plan for Interior Reform (PEPRI on its Spanish initialism) which involved the extension of Avenida Blasco Ibáñez through this area, which would have led to the destruction of 1,651 homes and the displacement of 1,200 families. Since the approval of the Plan, many people decided to move out, leaving empty buildings and houses that have been occupied by families and homeless people and the area has become a case of urban marginality, social conflict, and degradation.

The project's website aims to be an archive collecting the dispersed and shaken memories of those – both visible and invisible – who inhabit this neighbourhood and constitute its soul. The narratives collected are human stories of great determination, strength, and conviction, stories of immigration, difficulties, obstacles, discrimination, but also of hospitality, empathy, and affection. The different cultures present in such an emblematic neighbourhood are described directly by the protagonists and then represented by the children who, through these stories, get to know and recognise the living context. Many reflections arise from the coexistence of multiple groups in the neighbourhood, and the backdrop is the profound awareness of living in a part of the city that is constantly threatened by brutal real estate speculation which, as is often the case, goes hand in hand with financial and political interests against which the protests of the neighbours have been a shared memory of a particular historical moment.

Methodology

Born in the 1990s with the digitisation of information and the advent of the Internet, digital storytelling combines multimedia elements with the art of storytelling. For this action-research, storytelling has been used to support a teaching-learning process that enables students to be conscious protagonists in the participatory culture that characterises the era of transmedia communication (Schmoelz, 2018).

Digital storytelling is thus a tool for the creation of narratives, capable of integrating various multiform resources, offering a real opportunity to improve skills and competences ranging from information literacy to media and visual literacy, through the use of a variety of multimodal tools.

Using this technique, five stories (Salvoret, Las Ganchilleras Luchadoras, Espai Obert el Marítim, A Quelar, Pypa i Francesc) were created combining photography, animation, sound, music, text, and narrative voice. The open and flexible nature of this tool encourages communicative interaction, the development of creativity and imagination and can have a great sensory impact and expressive and evocative value. In the phase preceding the creation of the digital stories, the students, together with their teachers, explored the neighbourhood, contacted and met the people living there, collecting testimonies and reflecting on the meaning and values that individuals attach to their life experiences. The stories produced were published on a webpage, which relates the entire design and creation process and features direct testimonies from the people involved in the project.

Results and Data Discussion

Among all the narratives collected in the project, for the purpose of this contribution we have selected one that we consider particularly significant. It is the story of Emi and her daughter Yara. The story of a group of women and a village.

> My name is Emilia Heredia Pisa and I am a gypsy woman. I was born in a neighbourhood in Valencia called La Malvarrosa, but for the last few years I have been living in the neighbourhood of El Cabanyal. They are next to each other, both facing the sea. Now I live at the buildings in El Clot with my husband, my son and my daughter Yara. Some time ago, a group of women from our family decided to go together to study for a refresher course for our school-leaving certificate. We wanted to be able to help our sons and daughters with their school homework. And it was there, in that place, where we had the opportunity to learn how to do crochet, a beautiful activity full of hope and colour. So much so, that crochet became part of our lives. Now we know ourselves as "The Crochet Fighters". Our project was developed in the public school of Les Arenes, in El Cabanyal. Thanks to the collaboration of the teachers, the children and their families. We have learned many things, we have experienced many emotions, and we have worked with great enthusiasm. We met every Tuesday morning in a classroom that the school of Les Arenes made available for us. We have organised charity markets, we have won prizes, we have put on exhibitions, we have made a whole crochet monument for the Fallas festival and we have also taken part in

some seminars at the University of Valencia. In these years we have presented our project Las Ganchilleras Luchadoras in many schools and institutes of the city of Valencia, among them the Pare Català school. Now we are collaborating in this project called "Explora conmigo donde vivimos", to tell the story of the neighbourhood of El Cabanyal. And we also want to be able to tell our story. It is very important for us and for our community. Ours is a story of overcoming, of hard work and friendship. Furthermore, my daughter, Yara Giménez, who was a pupil at this school, is also taking part in the project. She loves children. And I hope that one day she will be a teacher.

Dibujo sobre Emi realizado por Lluc.
Alumno del CEIP Pare Català
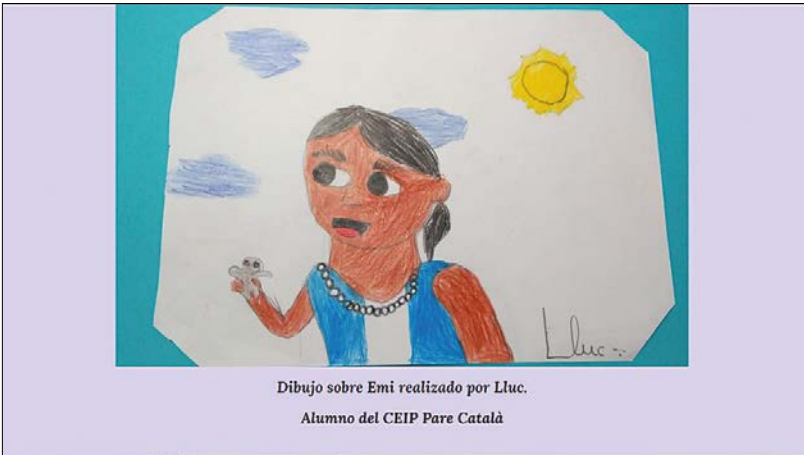
Figure 1. Graphic representation of Emi and Yara made by the students participating in the project.

The analysis of the material produced was based on certain dimensions such as:

a) the content of the narrative, its structure, the language used, the matching images and possibly the music chosen;

b) the impact that the narrative has on the experience of those exposed to the narrative itself, hence the narrative's capacity to move;

c) the spatio-temporal dimension, in that a tale takes place at a very specific time and in a specific place, which may be real or virtual, taking on a physical form of its own, a setting that is indispensable to strengthen the narrative, a world in which the reader can immerse himself;

d) the narrative subject who, thanks to his or her personal and professional skills and abilities, is able to convey the contents of the narrative project, to embody the narrative, influencing the experience that is lived by the user of the narrative.

In this case, the autobiographical narrative represents a point of reference to show something profound. The empowerment for the creation of new imagined and implemented worlds, through a long process of personal, collective, and communal self-organisation, giving way to the rhythm of one's own dreams or most urgent needs.

Conclusions

In conclusion, we can say that the use of storytelling has proved to be an important tool for representing reality, fostering knowledge of the surrounding environment and stimulating the imagination. At the same time, it has increased cooperation between educational agents, communication between people, dialogue between cultures and reflection on the relationship between education and territory.

We think it is important to work on the co-construction of narratives related to life experiences in a given neighbourhood, promoting active listening, reading and writing, not only as production, but also as a social exchange activity that helps to give voice to emotions and build relationships. In this sense, digital storytelling has proven to be a powerful tool to support collaboration and communication between collectives, schools, neighbourhoods and educational insti-

tutions, strengthening mutual social connections. Moreover, it offers numerous benefits for integral education, improving technological and linguistic skills and stimulating collaboration, as well as learning and reflection on identity, reality and life context.

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34.
Families in Education in the Digital Age: Uses and Practices of Digital Educational Resources in Childhood

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ABSTRACT

In today's society, children spend most of their time interacting with digital devices. On average, school-age children spend more time in front of screens than at school (Desmurget, 2020). Although many studies have focused on the impact of technologies in schools, there is a lack of research on their use in schools in early childhood (called Early Childhood Education in the Spanish context). Knowing the role of the family in relation to digital media is perhaps even more important at this age where they are the main catalyst for children's development, influencing all areas of their development (cognitive, social, emotional, etc.), and therefore, the aim is to respond to the hypothesis that the use of digital devices in the home is related to generational stereotypes that lead parents to acquire different roles depending on the media used. The aim of this article is to describe and analyse the perception of the families of Early Childhood Education students in Galicia on the uses and practices of Digital Educational Resources (DER) and Digital Teaching Materials (DTM) at home. The results highlight the dichotomy between the families' perception of the negative influence that these resources can generate (addiction and distraction) and the use as entertainment or looking after children.

KEYWORDS: *ICT; Childhood education; Family; Digital Educational Resources.*

Introduction

The cultures and principles of each family (Bauman, 2022) are fundamental in order to select educational resources that are allowed in the home and with them, access to information. What they learn and how they learn derives to a large extent from the educational style of each household (Rodríguez & Area, 2022).

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In today's society, and in general in most countries, children access digital devices and the Internet at an earlier age and in practically any context of their lives (at home, at school, in shops, in leisure centres, etc.) The tablet, mobile phone, video console, television or computer are tools that they use from an early age. According to the INE (2021) in Galicia, 58.7% of children between 10 and 15 years of age have a mobile phone, and computer use is increasing as age increases, reaching 98%. In addition to these figures, studies show that families with more children in their care increase their use of these devices. Other data focus on the digital divide and differences in household income and access (Ministry of Economic Affairs and Digital Transformation *et al.*, 2022).

The latest national health survey published by the Ministry of Health, Consumer Affairs and Social Welfare (2017) offered the following data: 73.9% of children between 1 and 14 years of age spend one hour or more of their free time in front of a screen every day during the week, rising to 82.6% at weekends. More than one in two children aged 1 to 4 spend an hour or more in front of the screen. Likewise, during the week, children from less favoured classes spent more free time in front of the screen than those from the upper classes, a difference that evens out at weekends.

It is important at this point to talk about content. Given the motivation and hours of use associated with these resources, all the content with which they interact constitute important socialising agents (Marta & Gabelas, 2008) and reinforced learning.

For parents, control over the consumption of digital resources and materials by children is a fundamental issue, perhaps because many experts are warning that excessive use of these can contribute to sedentary lifestyles, isolation, obesity and even depression in children. However, in this society swept along by the "digital current", screens have become an electronic babysitter for many families (Rodríguez & Area, 2022).

The need to know and analyse more about the assumptions, prejudices and reflections that teachers and families have about these resources for children is a matter of great interest. Based on these considerations, a group of researchers from the Autonomous Communities of Galicia, the Canary Islands and Valencia proposed an R&D research project with the fundamental aim of analysing the

characteristics of digital educational resources for Early Childhood Education and the opinions of teachers and families.

In this article we will focus on families and thus respond to the following main aim: to explore the uses and practices undertaken by Galician families in relation to the DER and the DTM created for the early childhood education stage.

Methodology

This contribution shows part of the results of the R&D&I Early Childhood Education research project (RTI 2018-093397-B-100) (2019-2022 "Digital teaching materials in Early Childhood Education. Analysis and proposals for use at school and at home", study with national R&D&I funding from the Spanish Government). A project carried out in four stages by three research teams based in the Canary Islands, Galicia and Valencia. Based on the analysis of digital educational resources offered for the Early Childhood Education stage (3-6 years) on different platforms, both commercial and institutional (stage I), a second stage was carried out with the aim of identifying, through a questionnaire and a semi-structured focus group interview, the views and opinions of teachers and families on DER. The last stages are defined with case studies in different classrooms attached to centres in the autonomous communities involved in the project (stage III) and the production of a good practices guide aimed at the entire educational community on the use of DER in the classroom and at home (stage IV). A project encompassed in a mixed type methodology that combines qualitative and quantitative data collection and analysis instruments.

This research focuses on stage II, specifically on the analysis of the results of the semi-structured interview conducted with families with children in Early Childhood Education. The methodology used for this is qualitative, through the technique of analysis by coding significant units and segments of information in double-entry matrices. The discursive analysis was developed following an axial coding model (dimensions, categories and subcategories).

The team from the University of Santiago de Compostela and the University of A Coruña carried out a focus group made up of 5 mothers and 1 father of children aged between 3 and 6 years. Five criteria were established for the selection of the sample: (1) two people for each of the educational levels into which the early childhood education cycle is structured in Galicia; (2) families with children enrolled in private, state subsidised and state schools; (3) schools located in rural, semi-rural and urban areas; (4) different types of schools; (5) different Galician provinces.

The instrument used by the researchers to guide the focus group interviews was developed specifically for the project in which this work is framed. It is a guide organised in five dimensions: (1) identification data; (2) valuation of the DTM; (3) household use of DER by children; (4) economic influence and household use of DER; and (5) Coronavirus and DER. This contribution focuses on the third category of analysis: DER use and parental roles.

Results

The following is evidence and reflections relevant to the research questions posed above (uses and practices of DTM and DER at home).

The presence of technology in the households of the interviewed families is a common denominator, as are the main devices available: Tablet, computer, smartphone and television with network access (Smart TV), with some of these being referred to as owned by minors.

The results of the analysis show that the use of DTM and DER is mainly for children's entertainment; a response that contrasts with the fear of the side effects attributed to them (addiction or excessive use and distraction).

(…) of course the best thing is that they play, from my point of view, with… with anything else, except screens (G1E1F23 00:31:27:800).

When they play a bit with the Tablet or watch a bit of TV, I do notice that it causes them a lot of addiction, and they want more and more, so I try to avoid it (G1E1F21 00:26:32.200).

I think it distracts them, I mean, I, I, I think that is the intention of technology (G1E1F25 00:39:18.100).

Most of the families interviewed affirm that they use techno-
logical devices as a means to cope with their daily responsibilities as
"adults" and that, therefore, they acquire a role of being an entertain-
ment and looking after element for the children. The entertainment
and looking after status is visible to a greater or lesser extent in all
families:

> There are times when… you need… they need to be a little bit involved,
> so, well, you put the TV on a little bit or…well, the tablet a little bit, but
> as much as possible I try to avoid it (G1E1F21 00:26:32.200).

> If I want to do something, I have to put the TV on for a little while
> (G1E1F22 00:32:17.500).

> I only use it to put on cartoons on when I go to work so he doesn't cry
> (G1E1F24 00:26:02.200).

Despite the consideration of the DTM as an entertainment objec-
tive, they also attribute a complementary character to them with im-
portant contributions to the teaching-learning process (motivation,
immediacy, visibility, reinforcement, etc.):

> What we use is, YouTube, to do… my daughter likes sports a lot, we use
> it to do yoga (G1E1F24 01:00:10.800).

> I think that yes, it does motivate them (…) what we did was eh… sub-
> scribe him to a platform eh… it was to learn maths, it was simply to
> dedicate 15 minutes a day to it and at the end of those 15 minutes they
> had some games to play and so on and in this way he was very motivat-
> ed (G1E1F21 00:35:16.900).

> I think that for example eh… when they teach them something and
> they put a video as a complement, the videos are very visual and I think
> that sometimes they help them to understand much better than just
> starting from a book, you know? That, that it provides much more in-
> formation, much more, much easier for them to understand (G1E1F21
> 00:19:20.700).

> My daughter for example, eh… she learns a lot more with a song
> than… with a piece of paper (…) yes, that's right, you see? (G1E1F24
> 00:22:46.300).

I think that also, that (…) that the videos, helps to visualise some-
thing that they are, let's say seeing in a more theoretical way (G1E1F25
00:19:55.000).

In this balance between positive and negative attributes, are add-
ed the rules in terms of time of use. Most of the families interviewed
do not provide information on specific times of use, either because it
is not organised as such at home or because it is a sensitive question in
which families do not feel comfortable for fear of being judged. Only
one family indicated usage times and the intention to limit this (half
an hour in front of screens) although they recognise the flexibility
of this rule depending on the tasks or other responsibilities they are
responsible for:

They watch half an hour of television, every afternoon while they have a
snack, then they turn off the TV and start playing or doing homework,
or whatever… and, during the weekend I let them play for an hour on
the Tablet… eh, more for the older one, who is nine years old and al-
ready wants to play with his friends, and so, well, they look for a little
time to play online with their friends, and the younger one obviously
wants to be like the older one, so, well, I have no choice but to let him
have a little bit of time too. But I try not to make it more than one hour
during the whole weekend (G1E1F2101:01:56.400).

Er, well, in our case, rules, rules as such, neither the child basically what
he does is he looks at the Tablet or mobile is very very rare… at home,
he never asks for it. He can ask for it, well, when, when he went to the
bars, before all this, well, maybe on a terrace or something, he could
maybe… but he doesn't (…) basically, at home what he sees is the Tab-
let, but he doesn't have a rule as such beyond a limited time, within
reason, and if he wants to watch TV, he always asks for it (G1E1F26
01:20:09.300).

If, for example, at weekends or during the week, I'm more with her,
then I do control, at weekends, which is mostly a half-day period, which
can be from three to four, from three to five, when I tidy up and do
things, the father is there more, yes (…) I take the opportunity to do
things at home (G1E1F22 01:11:51.955).

Tablet, mobile phone and television are the resources most pres-
ent in the home, the latter being the only technological resource not
supervised whilst it is used, as well as the most used in terms of time

(½ hour every day compared to 1 hour of Tablet/phone at weekends). Fear of the content they can access via the Internet is greater than that exposed by TV channels. For families, supervision is essential at all times except when they are with the television, which exercises a looking after or electronic babysitting function, a concept coined by Rodríguez & Area (2022):

> I uh… if they are puzzles and I know what she is doing, I can leave her alone a little bit, otherwise I am with her, uh, yes what they see…. at the moment, no, especially on the mobile, on the television I'm not worried because I'm always watching television, but on the mobile I am, I am… yes I am with her. Yes I am, you go, from time to time I look, so that she doesn't see things that she shouldn't see, of course, the 15 minutes she has it, because if not, she goes into a page… eh… yes, yes. But I am with her, eh, I am… On the lookout, yes (G1E1F22 01:04:48.800).

Conclusions

Fears and prejudices surrounding children's use of DER and DTM in the family context create a gap between what families believe they should do according to hegemonic social thinking and what they actually do in the privacy of their homes.

Preventing the negative effects of excessive use and content management takes place only in restrictions on the time of use, but not in adequate supervision of children during use. Therefore, we note that there is a need to reconstruct parental roles and media literacy in order to improve the capacity of families to monitor the use of DER.

Identifying parental perceptions and practices in the digital society is important to create literacy strategies for families and relatives who need to recognise a new context of socialisation, entertainment and training established by DER and DTM.

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35.
Open Educational Resources for Early Childhood Education. Analysis of the Digital Teaching Materials of the INTEF Portal

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ABSTRACT

Research has been carried out on the OER available on the platform of the National Institute of Educational Technologies and Teacher Training of the Government of Spain at a time when Internet access has been essential for the continuity of the educational process in the school education stages. This study specialises in analysing the Digital Teaching Materials (DTM) in Early Childhood Education and, specifically, in the pedagogical dimension. The purpose of this paper is to describe the pedagogical dimension of the materials for use in schools, through the analysis of their didactic characteristics. Therefore, we used a qualitative descriptive methodology focused on the indicators of the pedagogical dimension, which served to guide the analysis. The results show that contents and activities are offered for different learning rhythms, developed in small, large groups or individually, promoting interactivity and collaborative work of the students. From this analysis we found that the materials analysed, in terms of the pedagogical dimension, have interesting educational aspects such as the philosophy that transcends the OER, open movements and the collaborative promotion of the creation of materials for the different areas and cross-cutting issues, possibility of alternating their use in the classroom with other materials and resources, and their ability to promote guided student learning.

KEYWORDS: *Digital Teaching Materials; Educational platforms; INTEF; Early childhood education.*

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Introduction

This research is based on three fundamental pillars that are dominating the current educational landscape. These pillars, which are closely interrelated, are as follows.

On the one hand, the characteristics of the knowledge-based society that define the social, political and cultural contexts of the 21st century and that are determined by the omnipresence of digital technologies. This dominant technological presence in all areas of society is demanding the training of citizens that are competent in the critical and responsible use of digital technologies. The social and educational transformation that the presence of these technologies is entailing is only comparable to the one caused by printed technologies, with the invention of the printing press, and which meant the hegemony of a mass-distributed literate culture and the consequent break with the cultural forms developed orally and visually up to that time (Area, 2017).

On the other hand, school education is no stranger to this demand for digital culture, as could not be otherwise, understanding that it has the socio-educational function of educating the new generation as competent citizens who respond critically to social demands. In this sense, the debate on whether or not to integrate digital technologies in schools has shifted to focus on efforts to take advantage of the technical potential of digital technologies, to energise and enhance the methodological change from a transmissive and receptive education, focused on teaching and teaching knowledge, to a constructive, critical and creative education focused on learning and on students' actions (Bethencourt-Aguilar *et al.*, 2021). This involves the integration and use of digital technologies and resources from the early stages of school education with the dual objective of boosting and facilitating pedagogical innovation towards active methodologies focused on tasks and activities that require active, creative and collaborative learning processes among students, and the consequent development of the digital skills of teachers and students.

Finally, the third pillar on which this research is based is educational policies for the integration of ICT and, specifically, operational policies such as technological resources and digital content (Kozman, 2008). It seems that, as shown by a multitude of research, enormous efforts have been made and an optimal provisioning of classrooms

and schools with devices and connectivity has been achieved. However, the availability and provision of digital resources, which facilitates teachers' integration and methodological change, still needs greater efforts to facilitate innovative pedagogical practices with digital technologies in classrooms and schools (Sanabria *et al.*, 2017).

In this sense, educational policies are being developed in macro-political contexts to provide Digital Educational Resources (DER) that facilitate their use by teachers and stimulate the consequent methodological change. An example of this is the policies on Open Educational Resources (OER) developed by United Nations Educational, Scientific and Cultural Organisation (UNESCO) since 2002, and specifically the 2017 Ljubljana Action Plan, which aims to boost educational policies in member countries to energise and enhance the educational use of OER.

OER are defined as educational materials developed with open codes that allow their use and reuse without the need for authorisation, thus facilitating their adaptation and integration in different educational contexts. Therefore, although it can be considered that OER solve economic financing problems, from the educational point of view, their value should lie in their pedagogical potential so that their integration can promote innovation and methodological change and enhance the quality of education. This pedagogical value of OER is promoted through their open use, which allows different users to improve their teaching and pedagogical characteristics as they adapt and integrate them into their educational practices. Indeed, UNESCO and COL (Commonwealth of Learning) characterise OER as having the potential to address the challenges of meeting the targets of Sustainable Development Goal 4 (SDG 4), which aims to ensure inclusive, equitable and quality education and promote lifelong learning opportunities for all (UNESCO & COL, 2020). Spain, as a member country of UNESCO, is developing educational policies to promote the use of OER through the National Institute of Educational Technologies and Teacher Training of the Ministry of Education and Professional Training (INTEFP).

Taking into account the aforementioned theoretical bases, this research raises the need to find out about the OER available in the INTEFP, for use in the Early Childhood Education stage and to analyse their pedagogical characteristics. It is considered that the psycho-educational bases for the promotion of future learning are

sustained in the Early Childhood Education stage, and the development of digital skills is among this learning. Another educational characteristic of this stage is the pedagogical model that defines the learning of children from 3 to 6 years of age, which is identified with globalising methodology, active learning and the pedagogical value of play. At the same time, the integration of technologies and the use of digital resources during this educational stage are full of controversies and opposing debates about the pros and cons of their use.

Based on the above, the challenges to which this research seeks to respond are the following: What OER are available to integrate into Early Childhood Education classrooms at INTEFP? What are the pedagogical characteristics of these OER? Do these OER promote and energise globalising methodology and active learning? What type of learning activities do they taken into account?

Research Methodology

This paper aims to describe the pedagogical dimension of digital teaching materials and resources for use in early childhood education; in this case we have focused on the analysis of their didactic characteristics. Therefore, we used a descriptive methodology of a qualitative nature, which allowed us to delve deeper into the indicators of the pedagogical dimension, which served to guide the analysis. The indicators used are: purpose, didactic characteristics, explaining the goals, description of activities and contents, cross-cutting issues, participation, type of learning promoted and pedagogical model underlying these resources.

1. Sample

The sample consists of twenty-four Open Educational Resources for the third cycle of Early Childhood Education selected from the INTEF platform. Resources have been selected with a probabilistic sampling within the areas of knowledge in which this platform is organised. The selection criteria for the open educational resources

were twenty-four recreational and educational resources hosted on the Ministry's INTEF platform for the Early Childhood Education stage. The criteria for the exclusion of materials were technical difficulties of access, presence of wrong links or difficulties in visualising the resource.

The inclusion criteria are that they belong to the early childhood education stage and correspond to the three areas of early childhood education.

We found the following distribution: mathematics (n=3), Spanish as a foreign language (n=1), language and literature (n=9), environmental education (n=4), sexual and health education (n=1), plastic expression (n=1), tutoring (n=1), civic education (n=2), history (n=1) and, in addition, a material that includes several areas aimed at Special Educational Needs (n=1).

The sample was reviewed in January 2021.

INTEF Digital Educational Resources Analysed			
1. The seahorse	2. Diet in early childhood education	3. The planet is in danger, can you help us?	4. Let's get to know the numbers!
5. Tessellations, creating decorative motifs	6. Sea of words	7. The silly witch	8. The handyman mouse
9. Colours: like a painter (Jarabe de Palo and Modá)	10. Space	11. My body on the inside	12. The loggerhead sea turtle
13. Alphabet	14. OER. A return to autumn	15. Hand gestures	16. Online maths games
17. The power of emotions: anger	18. Once upon a time, my story	19. Teaching unit for coeducation in early childhood education	20. Story to put together
21. What's in my cart?	22. "Autumn Leaves" Project	23. Pre-reading	24. The cradle of the Olympic Games

Table 1. The twenty-four Open Educational Resources for the third cycle of Early Childhood Education selected from the INTEF platform. Resources.

2. Instrument

The evaluation instrument used to analyse these twenty-four open educational resources corresponds to an analysis guide developed within the framework of the project in which this study is contextualised. The categories of analysis were the structure of the material, technological dimension, design dimension, pedagogical dimension, content dimension, evaluation and follow-up, and two other open categories of positive or negative issues. Each of these twenty-four educational resources were analysed using questions, facilitating the comparison between what was obtained individually in the comparative data analysis phase.

3. Data Analysis

In this particular paper, we focus on the pedagogical dimension with analysis indicators such as: didactic characteristics of the material (types and sequence of proposed activities, organisation of content, methodological strategy); inclusion of learning goals; contents and activities for different learning paces; individual, small group or large group learning; the goals, contents and activities promoting cooperative work; cross-cutting subjects are included; type of activities prevailing in the resources (discovery, consolidation, synthesis, reinforcement, deepening, research…); if it allows editing, modification or adaptation; if it promotes interaction among the different participants (students, teachers, between centres…); if it favours the role of the family; or the pedagogical model (demands and learning process, roles of the teacher and students, implicit pedagogy), among others.

The comparative analysis of these data has been carried out by means of a double-entry matrix in which, on the one hand, the previously established analysis categories are shown and in which the relationship with the Digital teaching materials (DTM) analysed is presented. Subsequently, the results obtained have been described, gathering the relevant information for the pedagogical dimension.

Results

In most of the DTM analysed, the final tendency of the resource corresponds to an educational purpose (n=20), with a few exceptions in which the purpose is mixed, combining the recreational possibilities of this resource (n=4).

Not all the teaching materials analysed include a methodological and didactic description of the resource. In those that this description is added, it does not correspond in its entirety with a coherent perspective of what is caused through the activities that have been proposed. For this same reason, and apart from what the authors of these OER indicate about their own resources, the teaching methodology implied in the educational resources analysed has been classified into two main categories. In order to facilitate the narration of the resources with different activity proposals, it was found that most of the open educational resources analysed include activities for discovery, creation or project tasks that are intended to be more active for early childhood education students (n=12). On the opposite scale, there is a minority of open educational resources more focused on more reproductive methodological tendencies or content exposure, with activities of selection among options, consolidation, or reinforcement (n=8). The remaining open educational resources have been considered as "other" due to their mixed methodological tendencies, lack of activities or lack of clear teaching characteristics due to their limited and specific nature (n=4).

Thus, the main activities framed through these open educational resources lead to the task of selecting the correct option as true or false, selecting from a list of words, among others (n=12); preparation activities either through digital tools or with manipulative and tangible tasks (n=12), viewing videos of children's content such as music lyrics or storytelling typology (n=8); display of content or listening to audios of single words or narration (n=7); viewing images or illustrations (n=5); performing the reading task (n=5); text-filling activities, writing a specific word or phrase (n=4); and, lastly and to a lesser extent, reflection tasks (n=3).

Most of the digital teaching materials present the learning goals they intend to achieve with this resource in the context of a proposal (n=16). The remaining eight teaching resources do not include any

section where this specification is introduced. Regarding the possibilities of adapting these activities to different learning paces, the vast majority of the resources do not include different activities taking into account different specific educational needs, nor do they introduce recommendations that allow for certain orientations to be obtained in order to carry out this type of adaptation (n=15). However, there are some digital teaching materials that, from the approach in which they are created, allow this adaptation to the different learning rhythms or that, taking advantage of the characteristics of the proposed activities, can be modified by the interested teachers (n=7). In this regard, it is noteworthy that one of the specific digital learning materials analysed is directly designed to provide educational content with adaptations for language and communication appropriate to possible specific learning needs.

Another of the main characteristics of an educational resource leads to an analysis of whether it is oriented towards individual, pair or large group use. The main activities added within these digital educational resources are of an individual nature (n=15), less frequently obtained in small groups (n=3) and only a minority are directed towards the large group (n=1). Some of the educational resources analysed take into account a mixed vision of grouping, alternating individual activities with others in small groups or large groups. In cases where group development of the activities is intended, the goals and contents maintain this coherence. Despite the fact that the educational resources analysed may favour cooperative or collaborative work, the use of these resources by early childhood education students cannot be done without the supervision and attention of teachers or families. Some sections could be used by the students, but the technical characteristics used in most of the resources created through the eXe-Learning tool, with many structured sections and with a fundamental basis in reading and writing for the use of these OER, prevent an autonomous use by early childhood education children.

The contents are related to the context of the students in most of the resources (n=15), but generally, the relevant cross-cutting issues in early childhood education are not addressed (n=14). The resources do not offer tools for planning one's own learning, although it is understood that the sequence of tasks and activities itself suggests a linear follow-up of the learning process. In the case of digital educational resources that are related to the relevant content in early childhood

education, the three areas of knowledge specific to this stage are taken into account: Self-awareness and personal autonomy (n=4), Knowledge of the environment (n=10) and Languages, communication and representation (n=9). As an example, we can cite the resource "What's in my shopping cart?" where we work on fruits, cooking recipes and shopping in supermarkets, content that is close to the context and environment of the students. Another example of content related to the early childhood education stage that includes some of the resources is the one entitled "Hand gestures", created through specific programming software, the main hand gestures, facial expressions and basic notions about road safety education.

The software used in the creation of the digital resource determines the possibilities of modification of the resource. In this sense, it can be seen that the resources created with the open source eXeLearning (n=18) programme allow downloading and modification of the material to, for example, adapt the content, update videos or links and improve the resource to the context of the classroom and its teaching proposal. This technical issue has repercussions on the pedagogical dimension, limiting the possibilities of flexibility and adaptability of the material, which is also known as OER. Some materials prepared with specific programming software, on the other hand, allow certain adjustments suitable for the accessibility of the resource, such as working with full screen, changing the resolution to adjust it or allowing an adaptive display. However, these features are only offered in a minority of closed-typed resources.

Finally, very few digital teaching materials, analysed in this platform within our selected sample, include activities that enable cooperative work (n=8) and even fewer resources that favour and specify the participation of families in the use of these resources (n=4). It should be noted that, although not specified, some materials may fit these characteristics. In some cases where the participation of families in the use of this resource is taken into account, this is justified by the presence of lockdown by Covid-19. In other cases, the presence of families is part of specific activities, framed within the digital teaching resources that have a methodological tendency towards project-based learning.

Discussion and Conclusions

From this analysis we found that the materials analysed, in terms of the pedagogical dimension, have interesting educational nuances such as the coincidence with the philosophy that transcends the OER, open movements and the collaborative promotion of the creation of materials for the different areas and cross-cutting themes, possibility of alternating their use in the classroom with other materials and resources and their ability to promote guided student learning. However, there are other difficulties that, although not directly related to the pedagogical dimension, are related to it, such as manageability by students, the complexity of the search and the lack of indications for the participation of families in the use of the resource.

The educational materials analysed from the INTEF platform show a methodological tendency towards project-based or active activities, but in general, there is still a high presence of selection or reproductive activities of an individual or large group nature in many materials. In addition, there are other technical difficulties in the creation of the resource such as interactivity or adaptability that affect the pedagogical use of the materials by children in kindergarten. Therefore, it is necessary to continue to emphasise the need to develop OER that promote constructive, critical and creative methodologies focused on learning and on the students' actions (Bethencourt-Aguilar *et al.*, 2021) through preparation, cooperative and autonomous learning activities.

The explicitness of the learning goals to be achieved is the majority in the materials analysed, which favours replicability in the use by other teachers who integrate the materials in the classroom, when their use is oriented to promote learning by goals. Discovery tasks, which are not at the opposite pole to learning by objectives but promote learning of skills, have been found less frequently with respect to the former.

The use of technology in the classroom has grown exponentially in recent years, and an increasing number of teachers not only introduce teaching materials in the classroom, but have also developed skills in the design of materials and offer them to the professional teaching community. For this reason, it is desirable to analyse open educational resources to study their educational dimension. The anal-

ysis of these materials allows us to highlight those that make collaborative use by the students possible, the involvement of families and their use at home and the use with students with educational support needs. It is these OER characteristics that enable the development of Sustainable Development Goal 4 (SDG 4), which aims to ensure inclusive, equitable and quality education and promote lifelong learning opportunities for all (UNESCO & COL, 2020).

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8.

PANDEMIC PERIOD

36.
Early Childhood Education Teachers' Perceptions of Technology and Digital Educational Resources during Lockdown

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ABSTRACT

This text describes the situation experienced by Early Childhood Education teachers during the closure of schools due to the pandemic caused by Covid-19. Although technologies were already present in all areas, they proved to be essential tools to respond to the educational situation of the time. This study, framed as part of a project of the national R+D+I plan, aims to know the perceptions of infant education teachers about the role of technology and to analyse the use they made of digital educational resources during lockdown. The results show agreement among six teachers interviewed in considering that a prior link between teachers and students is necessary for online teaching to take off in Early Childhood Education; to reinforce this, some opted to create their own resources and better adjust to the characteristics and needs of their students. Negatively we should highlight the disconnection of certain students due to a lack of autonomy at this stage, or due to a lack of resources, knowledge or family work-life balance. Finally, this situation highlights the training needs of teachers, since their knowledge, both technical and pedagogical, is essential to make good use of educational resources.

KEYWORDS: *Early Childhood Education; Digital resources; Technology; Teachers' perception; Coronavirus.*

Introduction

It has been a very difficult time for coping, with regards to the impact of the pandemic, especially during the months of lockdown. For many families, these have even been unfortunate moments, as they

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have been affected symptomatically and in some cases experiencing suffering and in others even the loss of human life. The educational field has not been spared from this impact and it has been necessary for the educational administrations to adopt complex measures to reorganise the system in order to face a pandemic that has affected all levels and stages of the educational system, and all the agents involved: teachers, students and families.

From the current perspective, and at the stage that interests us, it can be affirmed that the experience of lockdown during the SARS-CoV-2 Coronavirus pandemic has certainly allowed us to experience a new way of "being at school" from a very early age. This finding has highlighted the importance of complementing and enriching the teaching and learning process with a conscious use of technology. This constitutes a useful tool to meet the needs, among others, of training in an interdisciplinary perspective, keeping the relationship with families alive and, in short, providing the possibility of continuing to learn, although its presence is still not very common in the Early Childhood Education classroom. The main reason is that it is a stage in which the emphasis is on multi-sensory learning, relationships, contact with others and presence, especially through more manipulative and experiential activities and resources.

On the other hand, as shown in Figure 1, the use of different devices and multimedia materials among children is becoming increasingly common. This fact significantly increased during the lockdown period in combination or together with other types of non-digital manipulative materials of a more traditional nature or, probably, more typical of these early levels.

Various studies, including that of Blumberg *et al.* (2019) and that of Maureen *et al.* (2018), have shown how technologies can help diversify teaching and learning processes and, consequently, improve cognitive styles; while fostering multi-sensoriality related to body expression, manipulation, gestures, creativity, sense of touch, rhythm and sound dimensions.

Thus, while it is important to analyse what spaces they occupy and who is affected by technologies in Early Childhood Education, and how digital resources and materials can support the didactics used by teachers among the youngest children, it is also important to monitor their implementation in the school classroom, from the

experience of the researcher's fieldwork and the point of view of the teachers.

Figure 1. Uses of technology in the home.

The proposed trajectories and first-person accounts, which we will see in the following pages, narrate how the use of technology is connected, on the one hand, to the possibility of developing cognitive dimensions and skills, conscious handling of the media, question of documenting praxis and, finally, need for adequate teacher training. The narration of the experiences that, in addition to investigating the problems, the didactic planning and the articulation of the activities carried out, allows us to reflect on the results in relation to some of the key dimensions of children at this age such as socializing, getting

involved in environments and contexts outside the familiar ones, developing autonomy and discovering the social rules that characterise the moments of disseminating and sharing with others.

Among the objectives of the research that we are still developing, we will focus in this text on the perceptions that the Early Childhood Education teachers have about the role of technology, as well as the analysis of the use they implemented of digital educational resources during lockdown due to Covid-19.

Methodology

The information presented in this paper is part of the fieldwork conducted during Study 2 of the national R+D+I RTI2018-093397-B-I00 project called "Digital didactic materials in Early Childhood Education. Analysis for use in school and home". Specifically, this second study aimed to identify the views of the agents involved in the design, dissemination and use of educational digital content. Although the entire project involves Galicia, the Canary Islands and the Valencian Community, this research focuses only on data collected in the Valencian Community.

The selection was intentional in order to make up the sample, in order to guarantee the involvement of the participants in the process and to take into account the diversity of schools, which could reflect the reality of the Valencian context analysed. Trained and competent professionals were selected, with extensive teaching experience, and who, throughout their professional or training career, had worked at a school with one of the researchers. It was considered necessary for the sample to be made up of men and women, from both state and subsidised schools, from urban and rural environments, from neighbourhoods with very different socio-economic levels, and for the participating professionals to have different roles in the centres; among them, those of being members of the management team, ICT coordinators, tutors, support staff, and diversity personnel; both from the centre and from the departments. Finally, the participants were a total of six teachers, five women and one man, whose information is reflected in the following table.

	1	2	3	4	5	6
Gender	Female	Female	Female	Male	Female	Female
Age	41	33	38	40	33	34
Position	Head of Studies English teacher	EI support	ICT Coord. Tutor	Tutor	Tutor	AL Specialist
Length of service	13 years	11 years	16 years	17 years	12 years	12 years
Training	Psychologist, psycho-pedagogist and EI teacher	EI teacher	Early Childhood Education teacher	Early Childhood Education teacher	PT Teacher EE Teacher	AL Teacher EE Teacher
Centre	Subsidised Urban	State Town near the capital	State CAES	Subsidised Urban	State	SPE
Contract's profile	Permanent	Career civil servant	Career civil servant	Permanent	Career civil servant	Career civil servant
Surroundings	Disadvantaged low-income families	Middle class families	Low educational level and low income	High level of education and medium/ high economic capacity	Middle class families	Performance in different centres (zone)

Table 1. Identification details.
Note: EI: Early Childhood Education; AL: Hearing and Speech; PT: Therapeutic pedagogy; EE: Special Education Needs; CAES: Singular Educational Care Centre; SPE: Educational Psychopedagogical Department.

Four of the interviews were conducted jointly and recorded with the consent of the participants to facilitate the transcriptions and facilitate the flow of the discourse. Subsequently, the transcript was sent for reading and approval. The remaining two teachers completed the interview individually and in writing.

The technique used to understand the reality from the perception and the words, in first person, of the subjects who experience the action was the interview, in this case prepared *ad hoc* and semi-structured, since they combined the conversational nature of ethnographic interviews with indications on the script to be followed. It is a communicative process in which, by creating a relaxed atmosphere, the interviewees are able to express themselves freely. The interview covered, after identification details were initially collected, a total of six analysis categories concerning: the valuation of digital resources, their use in the classroom, teacher training in this regard, the impact on the organisation of the centre, influence of the financial cost and, finally, some questions related to the use of these resources during lockdown. The data presented here focus primarily on teachers' assessment and use of materials during the pandemic.

Once the interviews had been transcribed, double-entry matrices were used to analyse their content, which, according to authors such as Miles *et al.* (2014), are made up by "the intersection of two lists, configured as rows and columns" (p. 109) and aim to interrelate a series of dependent variables and group the answers given by a series of subjects. Their main advantage is their extraordinary visual nature, as they allow information that would otherwise be spread over several pages to be condensed into a single figure.

Results and Data Discussion

The results presented below are structured according to the two main objectives listed above.

Regarding teachers' perceptions of technology and digital teaching resources, it is worth noting, firstly, that teachers agree that the technological equipment available in their centres and classrooms is sufficient and adequate, and although they mention several devices, the one they all mention is the Interactive Digital Whiteboard (IDW)

An example of this is the following quote: "Current centres have the minimum resources to implement CT-based teaching and apply Blended Learning in lockdown situations".

At this point, it is interesting to note that approximately half of the teachers report significant differences between the equipment available and the uses to which it is put in the teaching and learning process. The main reason behind this statement is, in their view, insufficient teacher training, which they consider to be the key to success in the process of integrating technology into schools.

Another aspect on which teachers agree is the importance of using other types of resources at the Early Childhood Education stage, especially manipulative resources that allow students to experience and experiment learning. On this issue, they do not hesitate and are categorical in this respect, as can be seen in the following quotations: "I advocate the use of manipulative materials at the early childhood education stage", or this one: "I'll stick with the manipulative material, without a doubt, because that one doesn't fail and has a little bit of everything too", or the following: "We prefer to use manipulative materials that the child gets to closer (…). Manipulative materials closer to them than a digital whiteboard".

Therefore, although in general the assessment of technology and digital resources and materials is very positive, and they consider that their strong point is the motivation they manage to awaken in students; they however conclude that these elements are not considered fundamental resources for early childhood learning. They are positioned in favour of others that are much more traditional: "I usually explain the contents on the IDW because it is more attractive to them and then each student already then with their printed textbooks".

On the other hand, focusing on the socio-health and educational situation caused by the emergence of coronavirus in all spheres of society, some aspects are appreciably nuanced. In the first place, teachers are in great agreement in considering that, for the online modality to work properly with Early Childhood Education students, it is necessary to have previously created a close affective bond between teachers and students, since it is really complicated to establish it only online: "If I didn't have an emotional bond with my children, I couldn't ask them to get in front of a screen".

For teachers, the situation created by the pandemic was a real common concern, especially not being able to reach all their students. Among the main limiting elements, those of a technical nature stand out; that is, the lack of digital resources by many of the families of their students, as stated by a teacher: "During lockdown we lost contact with more than thirty per cent of the students because their families did not have access to the Internet".

However, there are also other limitations related to the different learning styles of the students and the access channel to communication, since the majority of students of this age group, for obvious curricular reasons, have not yet learned to read, as expressed in the following interview excerpt: "What's the problem? That many of our children do not know how to read. So, when you want to create a material, there are few tools that allow you to create materials without the children having to read to know how to play the game, to play by themselves".

The months of lockdown are undoubtedly remembered by teachers, students and families as moments of anxiety and saturation, lack of time and working against the clock to try to respond to everyone. At that time, the increase in the use of technologies was exponential and innovative, since it was due to an unquestionable need. The following interview excerpt is proof of this: "It has been shown that we did not have an established plan and that we were improvising in the use of technologies".

However, at the same time, they experienced it as an opportunity to learn and transform their educational practice, creating their own materials or resources that would adjust as much as possible to the circumstances of their students and, therefore, their families. Although the resources offered and shared in open access were numerous and of great quality, some were unattainable due to their technical knowledge, so many teachers opted to create their own, out of necessity as we have already mentioned, and because they contributed to sustaining the link with their students.

As shown in the following photograph, video-conferencing was the system most frequently used by teachers to maintain contact with their students, and to accompany the teaching and learning process of the youngest children at home.

Figure 2. Video-conference of an Early Childhood Education classroom for 5-years old.

But they are aware that in many centres this was not possible. They also point out some problems of student disconnection, which are more evident in those centres with families with lower financial support. In short, the main reasons given are mainly the lack of autonomy of students at this stage, although others are also linked to those of the families, such as the lack of resources and knowledge or lack of concern in some cases.

On this point, there are also some disparate comments about the role of families in the use of technologies; some consider that they are agents that collaborate in the educational process of their children, but others observe situations in which families propose rules that are different to those of the centre, which are much more lax and not very conducive to the development and learning process of the children. One aspect that should be reviewed and worked on in the future is the importance of parental control, supervision and the establishment of limits that are perceived, in the fieldwork, as lax or diffuse by some of the teachers, as can be seen in this excerpt: "It's difficult to control this, because there are too many tablets at home, right? So … you have to, you have to control it. You can't just give a tablet to your child".

Finally, the teachers emphasize that this situation has made it possible to detect their training needs in this field. Although most

teachers stated that they only used digital resources and materials at specific moments in the past, they now consider it important to continue training in these technologies, both in technical and pedagogical matters. Conclusively, one of them pointed out: "I don't think we have adequate training for that selection".

And finally, as a result of the reflection raised in the interviews, interesting proposals arise, such as the need to create repositories or resource banks to be consulted when needed and to meet the needs of Early Childhood Education students with materials of all kinds, including digital ones. An example of this is the following quote, which shows that many of them are known among the teaching staff, although they are not fully available to them:

> I would look for a reference resource bank, this, this listing is, they are super practical, they are super clear, they are super educational and they have no advertising and also provides you with versatility so that you can create and introduce the concepts that you want. That's what I need…

Conclusions

It is evident that the impact of lockdown for teachers, as for the entire population, was drastic and, as in other sectors, they had to adapt their usual work to the technological media; however, as has been shown, the level of training and resources of teachers and families to take on virtual education was not optimal.

At a general level, it can be highlighted that the results obtained do not seem to depend on the gender of the participating teachers or on the type of centre in which they teach. However, the economic level of the families, the attitude and training of teachers regarding the use of technological resources in early childhood education are shown to be conditioning factors.

There is some agreement in the valuation of digital materials as a motivating tool for the proper development of the teaching and learning process, although their use is still limited to specific situations, as in the case of the unpredictable and unexpected lockdown, in which the didactic resources were used in their digital version out of obligation rather than by choice. However, their use in households

was considered excessive at the time, especially as they were almost exclusively for leisure activities with little parental control and a lack of time limits on their use.

Many authors consider that digital culture is here to stay, which is assumed by many other social strata; therefore, this temporary transition from face-to-face to virtual education can be taken relatively as a dummy run from which learning can be extracted. However, authors such as Britez (2020) state that from this atypical situation in which the necessary measures have been taken in order not to lose the school year, important issues have come to light that need to be improved in order to continue making use of virtual learning resources and environments. Once again, the key lies in the teachers, in their attitude towards digital technology and in their education and training to adequately use the available educational resources (Rodríguez *et al*., 2020) or to create their own.

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37.
Online Collaborative Learning in the Distance Education during the Covid-19 Pandemic

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ABSTRACT

The Covid-19 pandemic has driven all schools to organise themselves to enable distance learning. In this process, the age and background of the students, the skills of the teachers and the organisational capacity of the school played a crucial role. About pre-school children, the digital proposals developed by teachers have primarily represented spaces for affective and social continuity, contexts for sharing experiences as well as teaching tools (Hu et al., 2021; Bairaktarova, 2011). Support in understanding the contents of the study and in the use of new technologies, as well as the possibility of having space at home, made the role of families even more crucial at this moment (Santagati & Barbanti, 2020; Mori et al., 2021). For this reason, a crucial role was played by the head teachers and the organizational level of the school: the Covid-19 pandemic highlighted the importance of aspects such as the head teacher's learning leadership skills, the presence of distributed leadership, teachers collaborative attitude, the readiness to change, and the value of community (Agasisti, 2020; Paletta, 2020). This paper aims to describe the theoretical framework of an investigation that has the purpose of understanding which teaching practices and which technological tools and applications have proved useful in promoting collaborative learning in distance learning. In particular, it intends to investigate how relationships and active participation of students from pre-school to secondary school have been enhanced.

KEYWORDS: *Online collaborative learning; Relationship; Active participation; Distance education.*

Introduction

The literature on the topic of collaborative learning is now extensive and has increased during the closure of schools due to the

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Covid epidemic. In relation to this tragic and global event a number of surveys conducted both at the national level (INDIRE, 2021; 2022; Batini *et al.*, 2021) and at the international level (Carretero Gomez *et al.*, 2021) have highlighted the criticalities encountered by schools, students, and families. At the same time, we are aware of numerous teaching collaborative practices that have been enhanced by technology and that have restored a central role to students.

An important element of collaborative learning is the mutual complementation and interdependence between the individual and collective dimension of learning.

Henri and Lundgren-Cayrol (2003) present a wide definition of the Collaborative Approach as applied in a distance learning environment. In their perspective, collaborative learning is an active process aiming at progressive construction of knowledge, using the group as a source of information, a motivational agent, a means of help and mutual support, a preferred place for interaction, aiming at the collective development of knowledge. It take to accounts both the individual and reflexive character of learning, from one side, and the social relation through interaction in the group, on the other. In this sense, the group becomes the catalyst of learning.

By setting common goals and tasks, the group learns and constructs its knowledge. In parallel, this allows each learner to come up against the ideas, views, and opinions of the rest of the group, which, in turn, strengthens the learning of each individual member.

This wide definition allows us to consider collaborative learning and learning community as closely interrelated (Swan *et al.*, 2009).

Garrison *et al.* (2000) have proposed a complex framework of a learning community which frames the centrality of collaborative learning. According to Garrison *et al.* (2000), for the realization of a high-quality collaborative process and the subsequent establishment of a learning community, three main interrelated elements are needed: cognitive presence, social presence, and teaching presence.

In this regard, collaborative online learning has great potential for competence development, as shown by previous IUL research (Mori & Baldi, 2022). However, it should be kept in mind that the virtual dimension has different characteristics compared to traditional learning scenarios: in particular with regard to social communication

settings, cognitive load, teacher-learner relationships and/or student participation. In order to address possible problems arising from these characteristics, it is necessary to consider appropriate teaching tools, such as specific methodologies for collaborative learning, online moderation, appropriate learning tasks and computer-based visualisation tools (Hron & Friedrich, 2003).

The study attempts to answer the following questions: Which teaching tools and practices can foster online student participation and collaborative teaching? Which tools and methods are most widely used during distance education and still in use today?

Methodology

In recent times, the literature has shown an increasing amount of empirical work based on the mixed methods approach (Trinchero, 2019). Mixed methods do not mean a simple juxtaposition of qualitative and quantitative methods; rather, they seek to overcome the dichotomy between qualitative and quantitative research, responding to the need to ensure methodological pluralism (as "multiple ways of seeing": Greene, 2007). In order to investigate online collaborative learning in distance learning during the Covid-19 pandemic, the research team identified three main stakeholders: headmasters, teachers and parents, who represented the target audience for the large-scale quantitative investigation.

Underlying this choice may in fact be the need to obtain better inferences, using different data sources to increase the validity of the data, or again, the opportunity to achieve a higher level of understanding (insight) of the phenomena (Johnson & Onwuegbuzie, 2004). This survey design has been characterised as explanatory sequential (Creswell & Plano Clark, 2011), which involves a first quantitative phase whose results are intended, among other things, to more pertinently define the research question and target sample. This phase will be followed by a second one with a qualitative approach that will allow the results obtained to be deepened and investigated.

The first phase of the research, concerning questionnaire design, was devoted to the creation of three different sets of questions for school principals, teachers and parents.

Participants

At the time of the presentation, data are being collected. 99 people participated in the survey; among these 57 were parents (28.6%); 122 (61.3%) were teachers and 20 (10.1%) were principals.

The average age for parents is 47.6 years. The minimum age is 36 and the maximum age 61. With respect to gender 45 (78,9%) are females. The average age of the students is 13.7 years, from 3 to 19 years old.

The average age of the teachers is 49, 4 years. The minimum age is 24 and the maximum age 64. With respect to gender 110 (90.2%) are females. There are 11 preschool teachers (9%), 18 primary school teachers (14.8%), 16 secondary school teachers (13.15), and 74 secondary school teachers (60.7%). The remaining 2 (2.5%) are educators or CPIAs. Most of the teachers are from the humanistic area (**Fig. 1**).
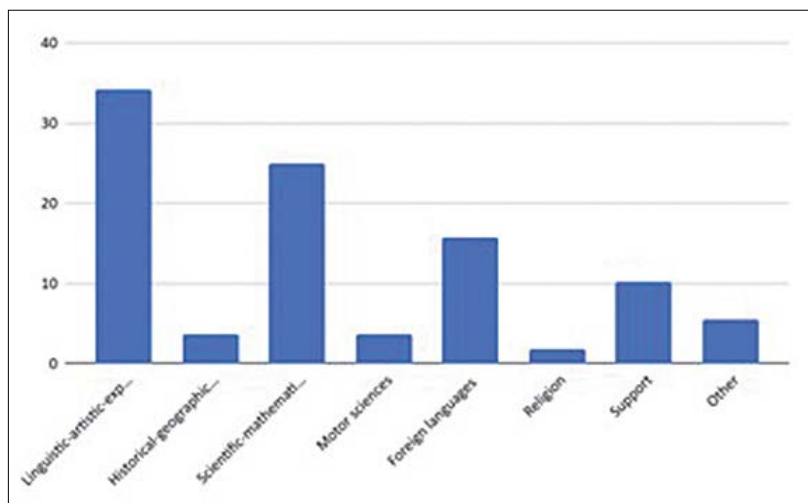

Figure 1. Teaching areas of teachers (percentages).

The average age of school principals is 54 years old. The range is 40 to 62 years. 90% are female – 50% are principals of comprehensive institutes; 45% secondary schools; 5% of private schools.

Tools

The research tool chosen was the questionnaire. The administration of the questionnaires took place in March-June 2022. The main type of questions is multiple choice and Likert scale with four response alternatives. An even number of the alternatives was preferred to avoid answer neutrality (Cox, 1980). The questionnaire was articulated by providing *structure questions* (the basic characteristics of the respondents are identified with regard to biographical data; service and professional activities); *context questions* (they aim to construct the scenario with reference to the purpose of the research being done); and *purpose questio*ns (these are the ones that most strictly allow answering the objectives of the research). The form of the self-filled questionnaire, in a computer-based form, was chosen because of its advantage of simplifying its administration. In fact, the system makes it possible to skip questions that, based on previous answers, should not be asked to the respondent. In fact, the development of the questionnaire included both 'primary questions' (on the answer of which the performance of one or more secondary questions depends) and 'secondary questions', the performance or non-performance of which depends on the answer that was given to a primary question.

The survey was voluntary and anonymous, although the last question included the option of providing the e-mail address to make oneself available to share his/her own experience. Teachers, school leaders and parents were involved in the survey through dissemination on IUL's social media and community channels and by direct invitation through mailing lists.

The questionnaire design phase was preceded by careful analysis of ministerial documents and reflection on early data from surveys on the topic. The almost complete matching of some sections of the questionnaire addressed to teachers, managers and parents aimed at comparing responses among the three groups of respondents. With the questionnaire, an attempt was made to investigate perceptions regarding the ways in which the processes of relationship and active participation of students were fostered.

The questionnaires were articulated in the following areas of inquiry:

	School Leaders Questionnaire	Teacher questionnaire	Parents questionnaire
Dimensions investigated in the questionnaire	I. Biographical data II. Service information III. Professional Activities IV. Use of new technologies V. Tools/school VI. School organisation VII. Teacher training VIII. Relationships and active participation	I. Biographical data II. Service information III. Professional Activities IV. Distance learning V. Use of new technologies VI. Methodologies between childhood and primary/secondary VII. Tools/Classrooms VIII. Relationship and active participation	I. Biographical data II. New technologies at home III. Children's participation in school life IV. Parental role and digital skills V. Relationships of the son/daughter
Number of questions	n. 33	n. 30	n. 30

Table 1.

The macro-dimensions common to and across the different data collection instruments allowed for triangulation and comparison when processing the results, managing to provide multiple points of view on the same issues investigated (Trinchero & Robasto, 2019).

Once the final version of the questionnaire for the three typologies of recipients was defined, the online version was implemented, through the Lime survey platform of the Telematic University of Studies IUL to ensure a prompt distribution and collection of responses. The results were analyzed using SPSS software.

Results

Results are reported for the three stakeholders involved in the survey. Parents, teachers and principals.

As regards the parents with respect to the tools/apps/platforms used by their children at home during distance education, they responded as shown in Figure 2.
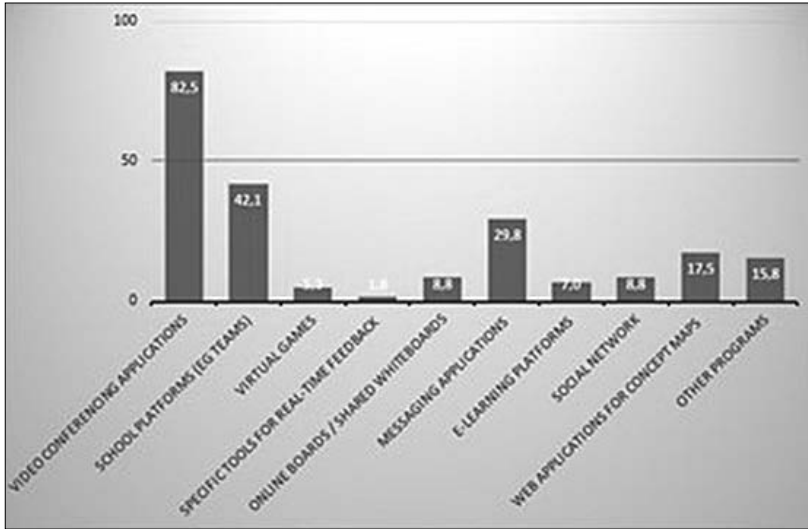
Figure 2. Programmes used by their children at home during distance education regarding parents.

However, most of respondents (42.1%) claimed not to know which applications were indicated by the school, 38. 6% stated that the school suggested the use of online platforms to keep in touch with students: of these, 9 mentioned *Classroom*, 2 *Axios*, *Canva*, *Electronic register*, *Meet*, *Mastercom*, *Classdojo*. Regarding the suggestion of video games, only 4 parents (7%) stated that the school suggested the use of video games to encourage interaction: of these they mentioned *Kahoot!* and *Visual sketching*.

As far as teachers are concerned, 96% of the respondents claimed to have used PCs as a tool for distance learning. As far as programmes are concerned, the majority used videoconferencing applications (**Fig. 3**).

With regard to the methodologies used by teachers to foster collaboration 'the dialogic lesson', the cooperative learning and the flipped classroom seem to be the prevalent ones (**Fig. 4**).

With regard to principals, most state that their school did not use any digital platforms before the pandemic (**Fig. 5**).
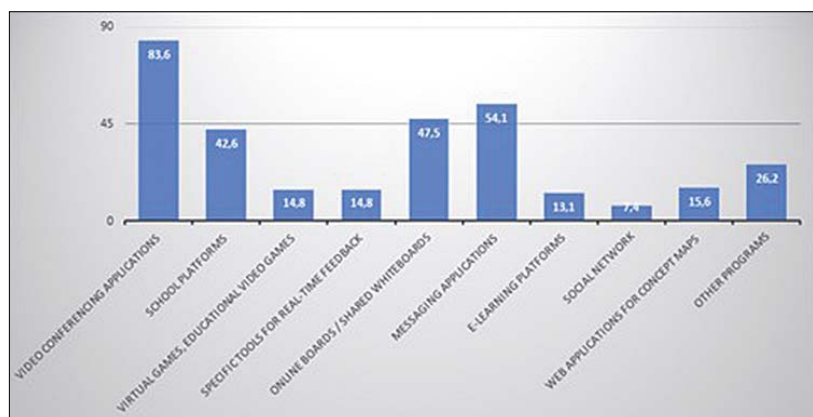
Figure 3. Programmes used by teachers during distance education.
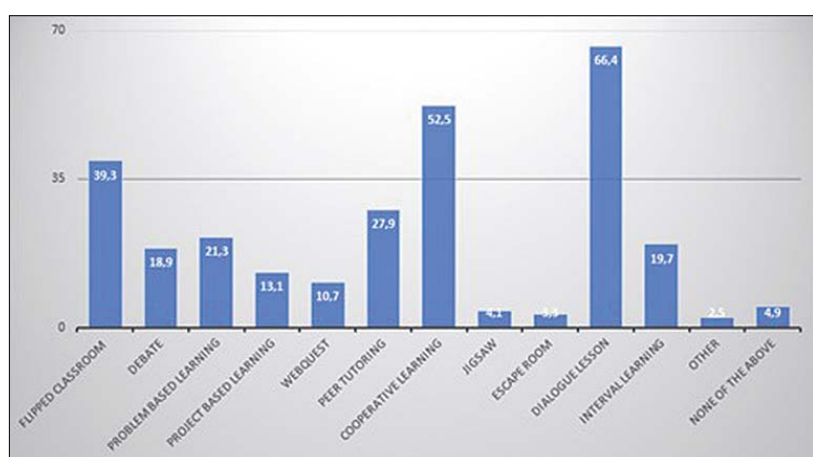
Figure 4. Methodologies used by teachers to foster collaboration.
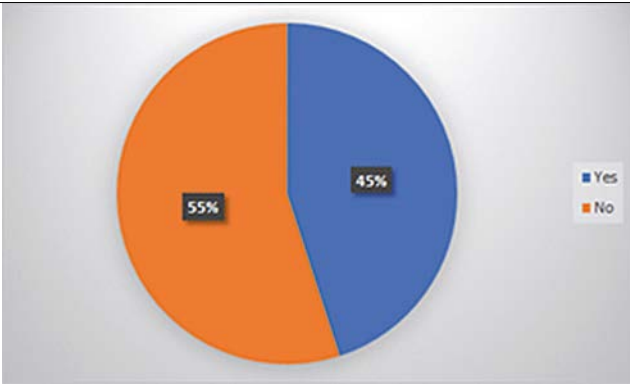
Figure 5. Presence of an online platform before the pandemic.

Principals were asked which were the most useful tools for communicating with the family. The electronic board emerged as the most suitable choice, although it is interesting to consider how social networks and the school website gained value at this stage (**Fig. 6**).
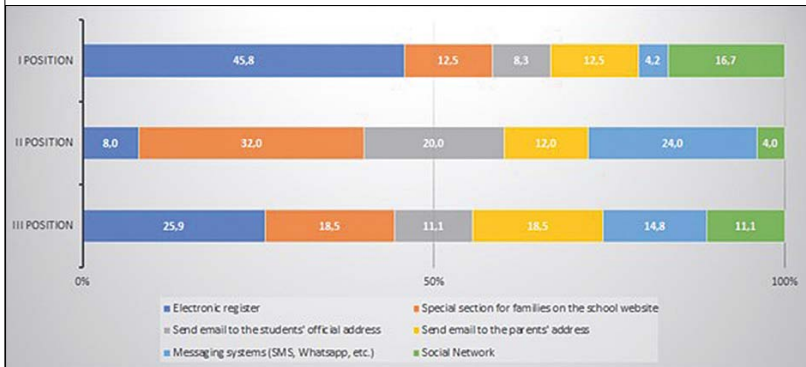
Figure 6. Effective tools for communicating with the family according to managers.

Discussion

The aim of the contribution was to analyse the technological tools used during distance learning to improve collaboration between students. The comparison of the responses from three different perspectives (the school principals, students and teachers) improves the validity and reliability of the results obtained (Giovannini & Marcuccio, 2011). An initial reading of the data shows that the school proposed the use of technological tools and platforms: parents have little awareness of what these are, but it must be taken into account that the average age of the students in the sample is 13.7 years. Teachers mostly report that they have used tools for videoconferencing also to try to foster a collaborative approach. We assume that this can be achieved by dividing the students into virtual groups. The methodologies proposed are mostly those also used for face-to-face teaching.

School principals themselves indicate that they have relatively changed communication tools, especially with the family. However, social networks play a central role, while the use of virtual games, which, on the other hand, has taken on a great deal of importance in the non-formal sphere of students, and which could be an interesting tool for the development of disciplinary skills as well, remain at a more marginal level.

Preliminary Conclusions and Future Developments

The conclusions can only be provisional as the study envisages a further phase of qualitative work. In this first part of the research, the methodologies used seem mostly to repeat in virtual contexts what has been done so far in the classroom, where the predominant tool used is videoconferencing and the methodologies to promote collaboration the flipped classroom and collaborative learning.

Thanks also to the partnership with the Amiotti Foundation, the IUL research group will conduct a series of focus groups dedicated to deepening the most problematic aspects encountered by the three research targets (school principals, teachers and families).

In particular, in this second qualitative phase, the elements of interest that emerged from the surveys will be explored in order to

understand in which contexts and under which conditions collaborative activities were most developed/were most in place. Furthermore, thanks to the collaboration with the University of Bath, an attempt will be made to understand if and how parents' digital competences constituted an enabling element for a full learning experience of students, in a dimension where formal and non-formal merge.

Finally, the study foresees the identification of best practices that could provide insights and inspiration for added-value practices in the post-Covid era. However, it must be considered that one of the major limitations of the study is that it does not rely on a statistically representative sample, as the research cannot have a nomothetic purpose.

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38.

The Use of Educational Medias in FL Classes in Lower Secondary School in Iceland during the Pandemic

Michael Dahl[*]

ABSTRACT

The purpose of this paper is to contribute to the knowledge of how textbooks and educational medias have been used in language teaching in the Icelandic upper primary schools during the pandemic. The data for the study derive from a quantitative survey that was conducted among 97 language teachers in upper primary schools in Iceland during the Autumn of 2021. The results tell us that teachers make decisions of using a variety of educational media when changing from on-site to on-line teaching. One of the questions emerging is whether the teachers' struggle with finding and using adequate educational medias during the pandemic and whether it will influence their teaching and choice of teaching material in the future.

KEYWORDS: *Pandemic Covid-19; Digital resources; Digital learning; Foreign language learning; Home schooling.*

Introduction

The compulsory education in elementary school in Iceland is 10 years, 1st to 10th grade, starting when the pupils are 5 or 6 years old. Foreign language learning starts at 4th grade when the pupils are about 9 to 10 years old. The first foreign language is English, the second foreign language is Danish and the last two years of elementary school the pupils often have a choice between German and French. English lessons usually start in 4th grade but in some schools, English is frequently taught in grade 3rd. The second foreign language, Danish, is taught from grade 7th grade, when the pupils are 11 to 12 years

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old. German and French are only taught as elective subjects in the last two years on the lower secondary level, 9th and 10th grade.

Around 85.1% of the pupils learned English in compulsory schools in 2020 and a slightly lower percentage or 82.4% learned Danish (Statistics Iceland, 2022). The pupils can also choose Norwegian or Swedish as the second foreign language instead of Danish. However, only a minority or about 9.6% of the pupil population makes this choice. In all, roughly 95 % of the pupil population is taught a foreign language. The last 5% of the pupils is excepted because of a specific handicap or beforehand knowledge of a foreign language. One can thus conclude that foreign language learning is important in compulsory lower secondary education in Iceland, though the authorities the last years generally have been cutting down the number of lessons in foreign language learning in elementary school.

All textbooks for educational purposes in all the subjects in the elementary school are produced and distributed by The Educational Institute of Iceland, *Menntamálastofnun*, which is state owned. An important practical consequence of this is that in all schools of the country each subject in the elementary education tends to be taught by using only one and in very few cases two textbooks for each grade, the parole being: Only one textbook in each grade of the school system.

Nevertheless, the last 20-25 years or so new teaching approaches and methodologies have successfully been implemented in foreign language classes. New technologies have emerged and have had an immense impact on choices of resources, teaching and, learning a foreign language. It appears as if on one hand the choice of textbook materials can be rather limited, which to a certain extent underpin and promote a rather enclosed/constricted teaching and learning environment. On the other hand, one finds traces of a much more open and unrestricted teaching and learning environment, where among other things computer assisted language learning, flipped learning, and blended learning approaches are introduced in the foreign learning classroom.

During the pandemic the use of Information and Communication Technology (ICT) in teaching and learning generally got to be more visible as the schools were forced to replace normal onsite classes with online learning and home schooling. In Iceland it was quickly decided to make the necessary precautions and as in many other

countries it was decided in periods to close the compulsory schools and change from face-to-face instruction to solely digital learning.

The experiences from school lockdowns have been widely described in the research literature. A contribution from Spoel *et al.* (2020) for example focuses on the teachers' expectations and experiences during the pandemic in the Netherlands. The results of the study reveal that the change from onsite to online teaching changed the perception of teachers regarding their resolutions to implement technology in their lessons in a post-corona era e.g. applying blended learning. This further resulted in new implications for the professionalisation of the teacher.

Other researchers write specifically about the technologies for the teaching during the pandemic (Gacs *et al.*, 2020). The most common communication platforms during the lockdown seem to be Microsoft Teams and Zoom, but also Facetime and the Upbeat software. Yet another way of communication can be done online in three-dimensional communities such as in Second Life. Virtual worlds like this can provide creative and cheerful environments for pupils' learning sometimes designated as *gamification* (Barry *et al.*, 2021).

Digital learning and homeschooling is in most cases facilitated with help from both teachers and parents. Misirli and Ergulec (2021) made a study focusing on parent's experiences and perspectives. The results suggest that the remote teaching is challenging for both pupils and parents and considered unsuitable for young children and pupils with special needs. Also, the parents complain about social isolation, lack of interactivity, and increased screen time. Other researchers make the same conclusions, and the results corroborate the findings from other surveys about teacher's stress and emotional labour during the pandemic. Also, one finds examples of research directed towards special subject areas. In one study about English as a foreign language (FL) in Jordan, one of the findings focuses on the necessity of developing a constructive approach outside the school involving a teaching methodology that allows pupils to learn effectively at home during – and after – the pandemic (Al-Sharah *et al.*, 2021).

In other words, research has widely been conducted on the teachers' and the pupils' reaction to the challenges and the pedagogical changes during the pandemic and even more research is focusing on teaching and learning at universities and colleges.

The aim of the study described in this paper is to learn if the pandemic has had any notable influence on the choice of teaching resources and materials used in the teaching of a foreign language classes in 8th to 9th grade in lower secondary school in Iceland. The point of departure for the paper is the following research question:

What impact has the change from solely teaching on-site to partly teaching on-line during the pandemic had on the use of textbooks and educational media in language classes in lower secondary schools in Iceland?

Methodology

To answer the research question, it was decided to conduct a digital survey among foreign language teachers teaching 8th and 9th in lower secondary schools. 90 schools from all over Iceland were randomly chosen out from a directive that they should be representative for all schools in Iceland, that is schools from both urban and rural areas. However, the number of urban schools especially from the capital area is rather high as about 2/3 of the population is living in the capital area or close to it. Therefore, schools from the capital area are represented to a greater extent than the schools from the urban areas as this reflects the infrastructure of Iceland.

The survey consisted of 25 questions divided into four main parts. In the first part the respondents were asked if they had taught classes using digital communication tools such as Zoom during the pandemic. The second part explores what kind of teaching materials the teachers have been using during the pandemic. In the third part the respondents are asked to reflect on if their teaching approaches have been changing during the last two years and if so how. The fourth part included questions concerning personal information such as how long the respondents have been teaching, their sex, in what grades they have been teaching and their age.

The survey was posted by e-mail to 121 language teachers and 97 teachers responded to the request of participation. The response rate was therefore 80% which can be considered as satisfactory. The gender composition among the participating teachers was 27 males (28%) and 70 females (72%) which corresponds to the gen-

eral gender composition among language teachers in elementary school.

Results

Google Classroom

According to the data, it seems as if Google Classroom is the most popular teaching and learning platform among the teachers. The data show that 85 of the respondents or 87.6% claim they use Google Classroom as it is a convenient learning resource and platform to streamline the process of sharing files between pupils and teachers.

Technical platforms

A little over half of the respondents (56.7%) explain that their pupils for free have access to private IPads or Chromebooks supplied by the municipality. The other respondents state that their pupils use private computers and/or work on computers in classes provided by the school. The first group of questions in the survey were all about how the teachers taught during the pandemic. All the respondents claim that they have for a shorter or longer period adopted on-line teaching during the pandemic using communication tools such as Zoom, Teams, Facetime, etc. The most popular communication platform seems to be Zoom as 69 respondents (about 71%) claim to use Zoom. This communication platform has been specifically chosen because of an easy access to breakout rooms as a teaching tool. Asked whether the respondents had other choices of platforms to choose between, all the respondents claim that they were offered one choice only, mostly Zoom or Teams. The teachers who used Facetime chose this communication platform by themselves.

Educational Resources during the Pandemic

The respondents were asked to specify which educational resources they chose to use during the pandemic. The provided text-

books. the workbooks, and PowerPoint seem to be the most popular teaching material during the pandemic, as all participants claimed that they often/always or to a fairly large extent used the textbooks. Fictional literature was not used to the same extent; about a fourth (23.7%) of the respondents declared that they only used fiction a little or not at all.

Most of the respondents, or 85.6% claimed on the contrary that they often or to a fairly large extent presented a film or video for their students during the pandemic. Presentations were often/always done by PowerPoint.

In foreign language teaching cultural artefacts or man-made objects of cultural or historical significance (e.g. original menus from restaurants, original posters from museums, specific toys, etc.) often are used as a motivating element. Six respondents claimed that they used artefacts during the pandemic, all the other respondents stated that they did not use cultural artefacts during the pandemic though they normally do it in their foreign language classes.

During the pandemic no teachers used drama in their digital classes. Roleplay and other versions of drama are widely used in foreign language classes. However, around half of the respondents or 56.7% said that they often or to a fairly large extent (2 to 4 times) let their pupils produce a video during the pandemic. The other half or 43.3% of the teachers stated that they only to a little extent (1 to 2 times) let the students do so.

Resources	Often (always)	Some	Little	None
Textbook (student textbook)	87 (89.7%)	10 (10.3%)	0	0
Workbook	95 (97.9%)	2 (2.1%)	0	0
PowerPoints	94 (96.9%)	3 (3.1%)	0	0
Fiction literature	34 (35.1%)	40 (41.2%)	22 (22.7%)	1 (1%)
Video/films (produced by others/receptive)	66 (68.1%)	17 (17.5%)	11 (11.3%)	3 (3.1%)

Student produced videos/productive	22 (22.7%)	33 (34%)	30 (31%)	12 (12.3 %)
Drama	0	0	0	97 (100%)
Cultural Artefacts	0	0	6 (6.2%)	91 (93.8%)
Digital educational games e.g. Kahoot!	65 (67%)	23 (23.7%)	9 (9.3 %)	0
WebQuest	36 (37.1%)	27 (27,8%)	29 (29,9%)	5 (5.1%)
News, features and other texts from the internet	57 (58,8%)	23 (23.7%)	17 (17.5%)	0

Table 1. A summary of how often the respondents claimed to use different teaching materials.

Digital educational resources such as digital educational games, WebQuest and using texts from the internet seem to have some popularity among the respondents during the pandemic. A total of 78 teachers or 90.7% stated that they used digital educational games such as Kahoot!, Quizlet, Minecraft, etc. Almost an equal number of respondents claim that they often or to a fairly large extent used news, features, and other texts from the internet. Using WebQuest seems to be less popular as 63 of the teachers stated that they used WebQuests often or to a fairly large extent and 34 or 35% said they used it a little or not at all.

Teachers' Reflections

In the third part of the survey the respondents were asked to reflect on their teaching approaches during the last two years. When "normal classroom teaching" is no longer an expected option and the teaching suddenly becomes solely digital most of the participating teachers or 86% claim that it became a priority to find digital materials to support the textbooks and to make the exercises more interesting and

motivating the pupils. As one teacher puts it: "New situations demand new teaching and learning strategies". Another teacher wrote that "the teaching during the pandemic meant that one had to think of including other kinds of teaching resources to support the existing material, which again required an implementation of new learning strategies".

Activating students during the classes seems to be a major concern for the respondents as most of the respondents stated that they during the pandemic made an extra effort to let the pupils get an opportunity to meet each other on the internet and collaborate about working on exercises. In an on-site classroom that is done through group routines and by working together as pairs. In the digital classroom the teachers can put the pupils into breakout rooms. This can be understood as one way to establish group activities among the students. However, working in breakout rooms also requires pupils to bring about new routines. This, one of the teachers wrote, was not as easy as expected. Though the students were put into breakout rooms they were not automatically ready to take part in the teaching activities. Due to the general situation of isolation the pupils understood the breakout rooms as feasible chatting rooms, which in the situation partly was OK. When using a digital tool in teaching, the teachers generally claimed, they had to put an extra effort into the class including more preparation and continuously joining all the breakout rooms during classes.

Also, many teachers mentioned that even though all the students had a camera attached to their device they used during digital classes, many did not broadcast their picture and instead turned off the camera.

New Resources, New Approaches

To sort out all these challenges in the digital classroom many of the teachers searched for inspiration from different digital learning sites. 38 teachers or 40% of the respondents claim that they got inspired by the concept of the *flipped approach.* To implement this approach teachers had to find out ways to introduce the topics before the students met in class. One way of doing this was by producing a short video about the topic of the day or find a video on the internet where the topic was presented.

According to the teachers who were trying out the flipped approach during the pandemic the work in the breakout rooms seemed to be much more meaningful if the pupils were presented for videos of this type before classes. Also, the pupils seemed to be more active during a session in a breakout room, if the pupils beforehand were presented for problem-solving activities such as finding different information on the internet about a specific topic.

Some of the teachers or 26 respondents (26.8%) explained that they found it rewarding to produce WebQuests as teaching material referring to the themes presented in e.g., the textbook. According to the respondents it helps pupils to determine and focus on their work in the breakout rooms if this approach is applied to the teaching.

Consequences

Many of the teachers explained that even though they missed the physical contact with their students, they also discovered some advantages in conducting digital classes and that they experienced it as a method to break down the walls of the classroom. One teacher made the statement that

> it is obvious that my pupils were rather satisfied to work from home (…). In my case, I together with the school leader, the parents, and the pupils differentiated the classes, so the teaching was not following the normal schedule. This meant that in a few cases my classes were scheduled to be held later in the afternoon. The argument for this being that it was an imperative to break up the schedule of the school to avoid boredom and tiredness.

All the teachers mentioned the fact that the quick change from on-site teaching to on-line teaching was rather time-consuming. The preparation of classes generally took much more time than normal. According to the respondents the preparation time was increased to 35-50%.

Discussion

The data suggest that the teaching of foreign language classes in lower secondary school in Iceland has generally been affected by the

pandemic. The sudden change to on-line teaching did have an impact on the teachers' choice of teaching resources and materials. Even though the textbooks and the workbooks during the pandemic still were the preferred educational resources for most of the respondents, it is also obvious that the teachers were keen on finding new resources to support the students' learning. It seems as if the teachers have used quite some time finding relevant materials on the internet.

Many of the respondents claim to have used different games as a teaching material and different forms of gamification as suggested by Barry *et al.* (2021) to involve and better activate their pupils' digital learning. Also, quite a lot of the respondents reflected on and changed their teaching approaches during the pandemic. WebQuests and the flipped approach seem to be popular methods to get the pupils to work inquiry-oriented and problem based. This indicates that the sudden change from on-site to on-line teaching involved a re-thinking of the didactics for many of the respondents. This re-thinking or *rededication* of the resources suggests that the pandemic in some way or the other has resulted in using innovative approaches in foreign language classrooms during the pandemic. This result resembles the results in the research from the Netherlands (Spoel *et al.*, 2020).

As in other countries digital communication platforms such as Zoom and Teams were activated as an active teaching resource during the pandemic and evolved into being a more integrated educational media in the foreign language classroom (Misirli & Ergulec, 2021; Spoel *et al.*, 2020). However, the data also reveal that only a few communication platforms were obtainable. In the future it could be of relevance to find out what communications platforms are available and from a functional analysis make the final choice of platform, instead of randomly choose among the two most common platforms.

It is an interesting detail that it seems to be the teachers with experience that are first runners when it comes to trying out new teaching materials and resources. At least the data imply that teachers of 24-35 years of age do not have as much surplus energy to make sudden changes as the ones with more experience, teachers of 35-50 years of age. This of course can be an argument in the future to make more precautions for the younger teachers and e.g., support them through intense teamwork and quick courses.

The data of the survey also tells us that the foreign language teachers realise that digital learning materials and resources can be more

helpful in their daily teaching than expected. In fact, a large group of teachers mention the possibility of implementing blended learning in their post pandemic classes. Though the pandemic prompted the need for a quick change in the use of teaching materials and learning strategies it seems as if it has opened for the use of new and different teaching materials that in the future could have a significant impact on teaching and learning practices.

The data also implicitly answers a bigger and more general question: Does the use of different kinds of teaching resources lead to different kinds of learning? The reflections of the teachers indicate that it is the case. Using new media resources and digital on-line teaching often seem to lead to new routines, which results in different kinds of new learning conditions. However, the study does not tell us exactly how this "new learning condition" looks like except that the pupils get activated outside the classroom. When the respondents mention a wish to change to a more blended learning, one can construe it as a wish to better activate the pupils outside the school. How this works out, whether it is possible at length, and what kind of consequences this "new learning conditions" generally has on foreign language learning in lower secondary schools are questions that need to be researched better later.

Conclusion

The data of the research suggest that foreign language teachers in lower secondary school in Iceland to a high degree chose to let the traditional textbooks be a didactic guide in their on-line teaching during the pandemic. So, the textbooks seem to have played a major role in framing the topics in foreign language classes during the pandemic. As some of the analog teaching resources, materials, and tools are not available in a digital teaching environment, many of the teachers experienced a need to include other digital teaching materials and tools to activate the pupils during classes. Using WebQuests and the flipped approach seem to be the most common innovative attempt. Also, many teachers used different forms of gamification to involve and better activate the pupils' digital learning.

As an answer to the research question phrased in the introduction, one can therefore state that the change from teaching solely on-

site to partly on-line during the pandemic seems to have had some impact on the choice of teaching materials and teaching resources in foreign language classes. Though the traditional textbook in many cases seems to have been used as a fundamental teaching material many teachers also found a need to use new digital resources during the pandemic. For many teachers this meant that they started to produce and present their own short video presentations about certain topics for the pupils and some of the respondents claim they also let the students produce their own videos. Also, it seems as if many of the teachers chose to use the internet to better search for materials for their teaching and different texts in connection with working with WebQuests and digital games. From working solely on-site teachers seem in the future to be more open for working with blended learning in a traditional classroom setting combined with an online learning environment. Whether this concept is going to be fulfilled will be interesting to research better in the future.

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9.

TEACHER TRAINING

39.
The Textbook as a Formative Element of the Teacher Habitus: A Review of Theses and Dissertations

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ABSTRACT

The literature suggests that multiple factors contribute to shaping a teacher's habitus during their educational journey, including textbooks. This paper presents research that delves into the training paths of various teachers to uncover evidence of the textbook's significance, both in their initial training and in their daily practice. The study involved a detailed examination of theses and dissertations from institutional repositories, employing a systematic review methodology. Twenty-two academic works were analyzed, with textbooks frequently appearing in observational research, highlighting their recurrent roles as reference and tool (Choppin, 2004). Reflecting on their student experiences, the participants recalled their teachers' methods of textbook use and class conduct. It was observed that there was a resemblance between their current practices and those they experienced as students, including the emphasis on textbooks. Therefore, it can be inferred that, while textbooks might not have been deemed crucial in the educational journey for some teachers, they still constitute a significant and notable aspect for others.

KEYWORDS: *Textbooks; Teacher training; Habitus.*

Introduction

This article serves as an example of more extensive research that aimed to identify, through aspects of life trajectory and teaching experience, the influences that contributed to the teacher's professional development.

Through documentary research, we explored theses and dissertations to find excerpts of teachers' narratives where they explicitly

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described their experiences and influences that contributed to their development as educators.

This study seeks to assess the impact of textbooks on teacher education and to explore teachers' interactions with textbooks from their childhood and student years. The objective is to identify the significance of textbooks for these educators and to examine how this aspect is connected to their socialization with these materials.

The theoretical framework used to address this topic is based on Bourdieu's theories, with a primary focus on the concept of habitus and the principle of explaining practices through incorporated experience.

The Notion of Habitus

Pierre Bourdieu, in his theoretical approach, aims to bridge the divide between subjectivism and objectivism. Grenfell (2018) notes that Bourdieu strives to comprehend how social structure and individual action can be reconciled and how they interact with each other.

Subjectivism focuses on the authenticity of experience and the immediate perception of the social world, treated as the natural world, without accounting for its conditions of existence. Conversely, objectivism departs from this primary knowledge, where relationships are replicated outside the realm of individual intentionality or consciousness.

Bourdieu introduces praxeological knowledge as an alternative aimed at transcending the dichotomies inherent in these approaches. As Ortiz explains (Bourdieu, 1983), praxeology involves identifying the mediation between the social agent and society, with habitus serving as the key intermediary element in this relationship.

For Bourdieu (2002), habitus refers to dispositions, ways of perceiving, feeling, doing, and acting that are the result of incorporation and learning. These dispositions are structured structures, reflecting the internalization of social structures through socialization. They are enduring and transferable dispositions that function as structuring structures, serving as the generative and organizing principles of practices.

Bourdieu (2020) suggests that the relationships between objective positions and position-takings occur through the habitus, rather than necessarily through conscious acts. This habitus, as a product of history and an embodiment of past experiences, aids in the formation of both individual and collective practices. In this framework, agents internalize past experiences as perceptual schemas, which then give rise to practical regularities. These regularities often have more influence than formal norms or rules, thus guiding behavior and actions. The explanation for these practices lies in the social conditions under which the habitus was formed and the social conditions in which they are enacted (Bourdieu, 2013).

The relationship between habitus and trajectory is a crucial aspect in Bourdieu's theory. As Bourdieu (2013, p. 94) puts it, the habitus is "the acting presence of every past of which it is the product". The trajectory is linked to the social group to which the agent belongs. The most typical trajectory for an individual in their origin group is termed the 'modal trajectory'.

It's vital to differentiate between trajectory and life history. According to Bourdieu (1996), the trajectory refers to a sequence of positions successively occupied by an agent in a field. The agent's orientation is shaped by their current position, while life history is often perceived in relation to its outcome.

Bourdieu (2013) discusses the "retrospective illusion", a perspective that sees a life's attributes as if they were its essence, turning it into a unit of meaning that, in hindsight, forms a coherent and meaningful narrative. Life history, thus, suggests that life is a coherent, purpose-driven whole, as if every action of the agent was always directed towards this end, following a chronological and logical sequence.

In Bourdieu's framework (1983), the trajectory, along with inherited cultural capital, functions as a fundamental organizing principle for practices. Biography should be understood as separate from personal intentions and actions, since the agent operates within a field of multiple forces, often without fully understanding the real meaning of their actions.

Miceli (2015) argues that reconstructing a trajectory or determining a class destiny based on social and educational backgrounds requires empirical evidence from a significant number of cases. Habitus, as da Silva (2011) notes, is a way of existing in the world, display-

ing regularities that provide insights into agents' class origins, class fraction, and field of action. Another point to be highlighted is the relationship between habitus and trajectory, because the habitus is "the acting presence of every past of which it is the product" (Bourdieu, 2013, p. 94). The trajectory, in turn, is associated with the social group in which the agent is inserted. The most likely trajectory of the agent in his group of origin is called modal trajectory.

It is also important to distinguish trajectory from life history. For Bourdieu (1996), the trajectory describes a series of positions successively occupied by the agent in the field, and the agent is oriented toward his possibilities as a function of this position occupied, while life history is usually represented as a function of the knowledge of his end.

For the author (Bourdieu, 2005; 2013), this knowledge of the end is the retrospective illusion, which reveals the set of features of a life as if it were its essence, transforming it into a unit of meaning that, in retrospective view, is a coherent and meaningful narrative view of events. In this case, life history provides the idea that life constitutes a coherent and oriented whole, starting from an intention, as if the agent's actions were always oriented to that end, according to a chronological and logical order.

Miceli (2015) emphasizes the need for empirical evidence from numerous cases to reconstruct a trajectory or ascertain a class destiny based on social and educational characteristics. The habitus, which represents a way of being and existing in the world, demonstrates patterns that reveal information about agents such as class origin, class fraction, and field of action (da Silva, 2011).

In the context of teaching, there exists a concept known as the 'teacher habitus'. This is a collection of elements that shape the epistemology of practice. According to da Silva (2005), it can be seen as the teacher's mode of being and acting, influenced by school culture, guiding their teaching practice and reflecting their socialization.

Ball and Cohen (1999) argue that initial teacher training is less impactful compared to the socialization that occurs during a teacher's own experiences as a student. This phenomenon, known as "observation learning" (Lortie, 1975), is often more effective than formal teacher training, as the didactics and conceptions of knowledge in training courses tend to reinforce conservative practices.

Supporting this view, Cole and Knowles (1993) note that teaching is deeply personal and greatly influenced by past experiences,

both within and outside professional contexts. Thus, the teacher habitus, heavily influenced by personal and professional experiences, may be significantly shaped by textbooks. Examining their use or non-use is crucial for understanding the context of their role in a teacher's trajectory.

Gatti (1997) identifies the textbook as a pedagogical tool of school culture that influences teacher actions. Lopes (2008) suggests that textbooks can bridge the gap between teacher training and practical needs, serving as a written curriculum that provides guidance.

This paper, therefore, aims to present the findings of a research project that investigated the influence of textbooks on teachers and how these materials contribute to the formation of their teaching habitus.

Methodology

This meta-research aimed to explore how teachers describe their professional trajectory, drawing upon studies by other researchers who have focused on teachers. The primary source for this research was the Capes Catalogue of Theses and Dissertations. The focus was on studies that included interviews and addressed aspects of the teaching profession, especially in terms of formation and experience. The goal was to identify categories related to the concept of habitus.

The search, conducted in December 2021, used "habitus", "teacher", and "interview" as keywords, combined with the Boolean operator AND, resulting in 78 papers. To refine the selection, specific criteria were applied. A key exclusion criterion was the presence of interview excerpts in the text or appendices. Three inclusion criteria were then applied: interviews with licensed teachers; focus on teachers in graduation courses; and inclusion of primary education teachers regardless of degree status. Papers featuring the category "Textbook" were given priority.

After applying these criteria, 22 out of the 78 papers were selected. The final selection was further narrowed to five papers based on the "Textbook" category.

The selected papers were:

– "O Programa Institucional de Bolsa de Iniciação à Docência na constituição da identidade profissional docente" (The Institutional Scholarship Program for Teaching Initiation in the Constitution of Teacher Professional Identity), dissertation by Dalete de Souza Salles Borges, from the Graduate Program in Education at the Federal University of Mato Grosso do Sul (2019).

– "A manifestação dos saberes docentes na prática pedagógica de professores de educação física iniciantes e experientes" (The manifestation of teaching knowledge in the pedagogical of Beginner and Experienced Physical Education Teachers), dissertation by Bruna Varoto da Costa, from the Graduate Program in Education at the Universidade Estadual Paulista Júlio de Mesquita Filho/Rio Claro (2010).

– "As dificuldades da profissão docente no início da carreira: entre desconhecimentos, idealizações, frustrações e realizações" (The difficulties of the teaching profession at the beginning of the career: between ignorance, idealizations, frustrations and achievements), dissertation by Fernanda Oliveira Costa Gomes, from the Graduate Program in Education at the Pontifical Catholic University of São Paulo (2014).

– "A prática pedagógica da educação física nos anos iniciais do ensino fundamental da rede municipal de ensino de Prudentópolis/PR" (The pedagogical practice of physical education in the early years of elementary school in the municipal school system of Prudentópolis/PR), dissertation by the author Osni Labiak in the Postgraduate Program in Education at the State University of Ponta Grossa (2019).

– "A identidade profissional dos professores formadores nos cursos de Licenciatura em Matemática" (The professional identity of teacher trainers in Mathematics Licentiate courses), dissertation by Julio Henrique da Cunha Neto in the Graduate Program in Education at the Federal University of Triângulo Mineiro (2016).

The works by Borges and Gomes involve teachers with a degree in Pedagogy; those by Labiak and Costa, with a degree in Physical Education; and the work by Neto is about Mathematics teachers.

The dissertations by Borges and Gomes involved teachers with degrees in Pedagogy, those by Labiak and Costa in Physical Education, and the one by Neto in Mathematics. The analysis considered the specificities of each area of training.

Results and data discussion

In her 2019 study, Borges analyzed the influence of the Institutional Teaching Initiation Scholarship Program (PIBID) on the trajectories of beginning elementary school teachers in the public education network of Corumbá de Ladário, Mato Grosso do Sul. These teachers were Pedagogy students and participated in PIBID as students. The PIBID, part of the Ministry of Education's National Teacher Training Policy, aims to foster teaching initiation, contributing to higher-level teacher training and enhancing the quality of Brazilian basic education.

Borges conducted research with five teachers aged between 20 and 50. Three had good material conditions in childhood, allowing access to books and newspapers, while the other two faced challenges in accessing educational materials, including textbooks. This provided insights into the teachers' cultural capital and its connection to their choice of teaching as a profession. The study suggested that textbooks represent a form of objectified cultural capital. Teachers lacking access to such capital in their formative years typically came from humbler backgrounds. In this case, the textbook's mention was more about cultural capital and primary socialization with the material than its current role in teaching practice.

Costa (2010) focused on how teaching knowledge manifests in the pedagogical practice of Physical Education teachers, considering the social trajectories of these teachers and how their habitus formed their identities. The study involved four teachers, aged 25 to 30, including two beginners and two experienced teachers. Semi-structured interviews were conducted, tailored to each participant and following class observations. When asked about lesson planning and activity selection, only one experienced teacher referred to textbooks, using them for activities and seeking ideas for performance enhancement. This highlights the textbook's role as a curriculum guide and instru-

mental function, as per Choppin (2004), who views textbooks as facilitators of competence acquisition through exercises and activities.

However, when another beginning teacher was directly asked about their interaction with textbooks, they referred to college materials instead, without mentioning textbooks.

Gomes (2014) aimed to analyze the link between career initiation and the challenges in its consolidation, focusing on four teachers. Only one teacher's class was observed, where the textbook was noted as a prevalent and necessary classroom element. However, the study did not explore whether other teachers used textbooks in their classes or as classroom support. Gomes simply documented the actions performed with the textbook, such as board copying, exercise use, and reading, without delving into its broader pedagogical significance.

Labiak's (2019) research focused on analyzing the pedagogical practices of Physical Education teachers in the early years of elementary school within the Municipal Teaching Network of Prudentópolis, Paraná, Brazil. This study involved observations and interviews with six teachers. When discussing their planning processes, three teachers notably mentioned using textbooks. However, they also indicated a predominant reliance on the Internet for daily teaching resources.

One experienced teacher, with 15 years in the profession and holding three specializations, emphasized the extensive resources available online, choosing to primarily use this medium. Another teacher also recognized the importance of online research while acknowledging the value of textbooks and collaboration with colleagues. Among these educators, only one specifically mentioned a collection of textbooks, including their digital versions, as a source for classroom activities.

The research highlighted that several teachers utilize textbooks as a guide for their classes, though online resources seem to play a more significant role.

Neto's (2016) dissertation focused on how educators in undergraduate mathematics courses form their professional identities. His findings revealed that participants recalled traditional teaching methods from their student days, involving repetitive exercises and book copies, but also well-contextualized explanations by some teachers.

One of the teachers shared some insights into how he started his teaching career, noting that there was a prescribed script to follow. As

a result, he prepared his classes and exercises in accordance with the textbook.

> (…) I had to follow a script, it wasn't that free. You had the course sheet, you had the text, and you had to stick to that, you weren't supposed to stray too far from the norm. So, we would take the book and prepare lessons, prepare the exercises, everything within the scheme, there wasn't much room for innovation (Euclides).

He described the beginning of his teaching career strictly adhering to a prescribed curriculum, preparing classes and exercises based on textbooks. This approach was a reflection of his own experiences as a student, with no specific guidance for teaching beyond what he observed during his undergraduate and graduate studies. Another teacher fondly remembered classes led by a traditional teacher who relied on a specific textbook series.

Neto (2016) observed that the experiences of these teachers as students, coupled with a lack of pedagogical materials, often led them to replicate previously experienced teaching models. While textbooks were commonly used, Neto treated them as a secondary issue in his research, without delving deeply into their impact or analysis.

Conclusions

The overarching analysis of these theses and dissertations suggests several key observations, particularly as they pertain to academic research conducted with teachers, and recognizing that these were not studies specifically about textbooks. Textbooks, despite being a component of public policy and thus ensured a presence in classrooms, were surprisingly more absent than present in the experiences of the surveyed teachers.

In the research focused on Pedagogy teachers, textbooks were discussed in the context of objectified cultural capital during primary socialization. Teachers from less privileged backgrounds lacked access to textbooks, primarily due to economic constraints, highlighting the role of textbooks as a symbol of cultural capital.

The studies by Gomes (2014), Labiak (2019), and Neto (2016) highlighted two primary functions of textbooks as identified by

Choppin (2004). First, the curricular function, where textbooks provide content support, and second, the instrumental function, offering methodologies for knowledge acquisition.

Costa (2010) and Labiak (2019) emphasized the textbook's significance in Physical Education, indicating its growing importance in pedagogical practice, despite the relatively recent implementation of public policy in this area.

The research on mathematics teachers revealed insights into secondary socialization, where the practices of more experienced teachers influenced the methods of novice teachers. This suggests that a teacher's own educational experiences, potentially more than their formal training, significantly shape their teaching practices.

Viewing this paper as part of a broader academic exploration, it becomes evident that there is a potential link between teacher habitus and the textbook. This connection manifests in the textbook's role in the classroom and the influence of teachers' past experiences on their current use of these materials. It appears that what teachers have experienced and internalized as students exerts a strong impact on their professional practice.

Therefore, the relationship between teacher habitus and textbooks emerges as an area ripe for further investigation. Integrating these separately identified issues could provide a more comprehensive understanding of their interplay and lead to more definitive conclusions about the role of textbooks in shaping teaching practices.

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40.
Educators' and Authors' Perspectives on Professional Textbooks for Teacher Education

Juliet Munden[*] and Catharine Meissner[**]

ABSTRACT

This paper presents some of the findings from an interview study that explored the purpose and role of professional textbooks used in English didactics courses in teacher education in Norway. The data is based on thirteen interviews with 21 informants. Two overlapping groups were involved: teacher educators responsible for courses in English didactics, and authors of professional textbooks in English didactics. We identified the main purpose and roles that the authors intended their professional textbook to fulfil. While we found many of the same perspectives among the teacher educators, these respondents also voiced more pragmatic considerations. An important way in which authors saw themselves as influencing the development of English didactics was in the relative emphasis they placed on the four types of knowledge we found in the professional textbooks, namely research, theory, repertoire and contextualisation. An analysis of the various ways in which the authors understood and positioned these types of knowledge suggests that there are different and not always compatible perspectives as to the purpose and role of professional textbooks in English didactics in teacher education.

KEYWORDS: *Teacher education; English didactics; Professional textbooks.*

Introduction

This paper explores perspectives on textbooks in teacher education, their purpose, role and the types of knowledge they include. More specifically, we look at textbooks in English didactics and investigate the following research questions:

– What do teacher educators and authors perceive as the purpose and role of professional textbooks in English didactics?

– How do authors position different types of knowledge in their professional textbooks?

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The term 'professional textbook' is one that we have coined in order to identify textbooks written to prepare tertiary level students for the practice of a particular profession. Professional textbooks are distinguished from disciplinary textbooks, which, for subject English, are typically about linguistics or literature. Some of the professional textbooks in this study do include aspects of the discipline of English, but they are characterised by a focus on the teaching and learning of English, a field we refer to as *English didactics*. The purpose of these textbooks, according to the promotional texts on their back covers, is to present the knowledge that a student must master in order to successfully practise as a professional English teacher.

This study is a response to the neglect of any kind of textbooks in national reports and teacher education curricula in Norway (Vestbø, 2020), and the current emphasis on research in higher education (Kyvik & Vågan, 2014). When Knutsen *et al.* reviewed textbook research in Norway in 2011, they reported no studies of textbooks in higher education. Both before and since their survey, it is the role and potential of digital resources that have received most attention in educational media research (Bondi, 2016; Gilje, 2021). Also international research in textbooks for higher education is very scant (de Cássia Fernandes Hegeto, 2021). And yet a national survey of curriculum choices in Norwegian teacher education found that paper-based textbooks were still very widely used in English didactics (Caspersen *et al.*, 2017).

This paper reports on the perspectives of two overlapping groups of educators: authors whose textbooks are currently on the syllabus for student teachers of English in Norway; and teacher educators who have selected these textbooks for English didactics courses. The study takes a developmental approach, to use Johnsen's classification (1993). He groups together as developmental those studies that are concerned with authors, publishers, approval mechanisms, curricula, political approaches and user approaches.

Methods

In the first phase of the project, a list was compiled of professional textbooks included in the reading lists for the academic year 2021/2022 in seven Norwegian institutions of higher education offer-

ing courses in English didactics on the 'lektor' programme. The five-year 'lektor' programme qualifies students to teach in school years 8-13, i.e. in lower and upper secondary school. We found nine professional textbooks on their reading lists. In the second and main phase of the project we carried out in-depth prompt-based interviews with the fifteen authors, interviewing them digitally with their co-author/s. We explored their motivation and expectations of their readership. We also interviewed all six teacher educators who were responsible for compiling the reading lists on then selected English didactic courses, with the one exception of the institution at which the researchers themselves are employed. Altogether thirteen interviews were carried out using Zoom, and the interviews were transcribed and analysed.

The interviewees, both authors and teacher educators responsible for compiling the reading lists, were all teacher educators, inasmuch as they were either currently in service or recently retired. The category of 'author' includes those who co-authored an entire book, those whose primary role was as editor of an anthology while writing themselves one or more chapters, and those who were author-editors, closely involved in co-writing chapters with invited contributors. In presenting the results we have retained the categories of 'teacher educator' and 'author', but in analysing the results it has been important to bear in mind many of our interviewees had experience of both authorship and compiling reading lists in teacher education programmes.

Results

When we asked authors and teacher educators about the purpose and role of professional textbooks, they put forward both pragmatic and content-related arguments. Authors and educators alike valued the permanence a professional textbook offered students, in contrast to online resources, "something that they can come back to and refer to, and it's always there". Students can make notes in physical books, said one, and several pointed out that an introductory textbook as a physical volume was more convenient than using a selection of digitally available sources. In fact, the textbook provides "a chance to, you know, log off the screen". One teacher educator commented that the

predictable structure of the chapters made the professional textbook they had chosen easy to use for both students and the teacher educator.

Providing a knowledge base by assigning chapters that students were expected to have read and processed before teaching sessions was seen as a way to facilitate shared learning experiences. For one educator the textbook was valued because it offered expert voices that supplemented their own opinions. A good professional textbook was seen as well suited to the promotion of *Bildung* and the desired teacher identity. An important argument put forward by many of the interviewees was that professional textbooks provide both an essential introduction to the field and references that the student could draw on for more independent studies at master's level.

A central concern of this study is how educators and authors perceive what we refer to as four types of knowledge, namely repertoire, contextualisation, theory and research. The following quotation shows how one teacher educator included all four knowledge types in their understanding of what constitutes English didactics:

> I think the new books, to put it like this, have a nice combination of theory and research combined with suggestions on how to teach, meaning that they also cover some of the things that English teachers happen to do in the classroom (…) And also that the new books are updated and they're linked to the current curriculum, and so on.

We will now turn to what the authors say about the relative importance and interrelation of repertoire, contextualisation, theory and research. We noticed that co-authors tended to be in agreement with one another, but there was considerable variation between the authors of different textbooks. The variation in perspective can have to do with the way the books were developed. Most authors reported that they had chosen to write with a colleague who worked or had worked at the same institution as themselves, and they described how they had over time developed a shared understanding of the purpose of the textbook and how they wished to incorporate different types of knowledge.

Repertoire refers to methods and activities that teachers can use to create motivating and engaging lessons. We have already seen that this was valued by teacher educators, but what about the authors? The

role of repertoire and how to frame it in their textbook was of central concern. For someone it was an inspiring aspect of the writing experience, to the extent that, "we even talked about doing something like this, more pedagogical, practical for teachers rather than another research-oriented publication". But there were those who, while acknowledging that repertoire was a type of knowledge that belonged to the field of methodology, had been keen to distinguish it from didactics as a discipline. Developing a repertoire of learning activities for subject English, in the opinion of these authors, was not primarily the responsibility of textbook writers but of those who prepared and supervised students in teaching practice.

Contextualisation in the present study refers to what the student teacher needs to know about English language learning in Norway, with a special focus on the current national curriculum. Our conjecture that the increased number of textbooks targeting English didactics in Norwegian teacher education reflects the strong focus on Bildung, diversity and democratic principles in the national curriculum was only partially borne out. In fact, authors differed as to the importance they placed on contextualisation. Some saw it as an essential part of a textbook produced for the Norwegian market, even structuring their textbooks to reflect the central concerns of the national curriculum. Others, by contrast, saw contextualisation as a sure way of making their textbook obsolete in the near future, given the frequency of revisions in the national curriculum, and changing priorities in teacher education. The argument was also made that since student teachers would meet several curricula in the course of their professional lives, it was more important to teach them the principles of language education than the specificities of a particular curriculum. However, a teacher educator argued for the usefulness of contextualisation, saying that a book should be "very context specific, because English is a special subject in Norway".

Theory and *research* were considered important by all the authors, although to varying degrees. Authors reported that they included more didactic theory and more recent research when revising new editions of their textbooks in line with the revised national curriculum. However, a pattern that emerged from our material was that there was relatively little explicit talk about theory. For example, two professional textbooks, one about multilingualism and the other about intercultural learning, to a large extent represent newer

theories about what constitutes English didactics, even though they were described by the authors as theoretical books. And one author suggested that secondary literature in a book about literary didactics could be regarded as a source of theory. When theory was explicitly mentioned, authors did not always make a clear distinction between theory and research, as in this example:

> And of course, some of the chapters you might say will have theory in the sense that you know some of our definitions are quite new and based on different recent developments. So in the field I mean theory-wise it's research in a way, although it's not empirical.

One set of authors positioned theory as a component of research, and explained that their use of theory was deliberately intended to make their chapters "closer to a research article". These authors had written their textbook to help their students learn how to engage with research publications.

More generally, research was understood by the authors in various and not always compatible ways. The term *research-based*, for example, was used to distinguish textbook writing from the practice of presenting original research findings, the idea being that professional textbooks make research coherent and accessible to students by selecting what is most central, relevant and reliable. Two of the authors stated they chose the topics in their textbook because they themselves had researched these topics empirically. This meant that they did not include other topics that, they acknowledged, would have been relevant for student teachers. By contrast, one author who by their own admission had not written about "original research", described writing a textbook as in itself a form of research, since it required extensive reading of research and theoretical literature to update their own knowledge.

The authors explained that they had chosen titles and subtitles that reflected their perspective on the relationship between and the relative importance of the four types of knowledge. Whereas repertoire was signaled in the title of several of the textbooks, others positioned repertoire as a type of knowledge to be derived from what research and theory can tell us about what constitutes good teaching practice and effective learning strategies. In the subtitles of these books, two present research as the premise for practice and two present theory as the premise for practice. In one textbook the authors

take contextualisation as their point of departure, in that they focus on the context for learning that Norwegian and European policy documents provide.

Regardless of how authors perceived the relationship between the different types of knowledge, the opportunity to influence the direction of English didactics, "a feeling of wanting to be one of the voices", was repeatedly mentioned as motivation for writing a professional textbook. Authors expressed a conviction as to the value of such textbooks in English didactics. They reported that their students had responded positively to their textbook, and that this had contributed to their sustained enthusiasm, which many of them had drawn on in producing a second edition. They were confident that their books had the potential to make a significant contribution to the field. They also foresaw a continuing need for such books, although perhaps in radically different formats or media.

Discussion

This study suggests that authors of professional textbooks are important players in teacher education in Norway. This is not surprising, since they have overlapping roles in the production, selection and use of textbooks. But given that textbooks are typically written by colleagues who are also teacher educators, it may indicate that the various teacher education institutions in Norway have developed distinct perceptions of what constitutes English didactics. The process of conceptualising, writing and then using a professional textbook sustains a shared understanding of the purpose and role that it should serve, and this includes the relationship between different types of knowledge in English didactics. The arguments for the relative importance of research, theory, repertoire and contextualisation arguably reflect long-standing discussions about what constitutes good teacher education, and who is best qualified to provide it.

We found divergent perceptions amongst the authors as to what constitutes research, and how the requirement that teacher education be 'research-based' should be interpreted. One reason for their divergent perceptions could be that the term 'research' is used in a very broad sense in the educational sector in Norway (Kyvik & Vågan, 2014). The

focus on research in professional textbooks can be understood as a response to the insistence in national policy documents that research be the basis for teacher education (Kyvig & Vågan, 2014; The National Council for Teacher Education, 2017; 2018a; 2018b). The assumption is that teacher education is improved when it is research-based. In fact, though the value of research in professional education is often considered a given by policy makers, this assumption is not necessarily underpinned by empirical studies (Kyvig & Vågan, 2014).

Theory was also variously understood, as we have seen. For some it was the working partner or a component element of research. For others it was newer developments in their field, or principles that they thought should underpin language learning activities. The different perceptions authors and teacher educators had towards repertoire can in part be seen as a response to the academisation of teacher education. Authors dealt with repertoire in very different ways. The authors of the least recent of the nine professional textbooks on the reading lists under study had retained a primary focus on what to do in the classroom – repertoire in our definition. The others, perhaps more strategically, included sections with titles like 'practical applications' or 'research-based recommendations' which dealt with repertoire, but now framed in more academic terms. Another factor for the positioning of repertoire, said several of the authors, is that they were writing within the constraints of the academic accreditation system. Their perspective on contextualisation was also affected by strategic considerations, with the result that, despite being valued by teacher educators, a few authors chose not to include it at all. Their fear that their book could quickly become obsolete if they did so can be understood in light of the flurry of new editions triggered by the most recent curriculum revision in 2020. In a longer perspective, however, not only contextualisation, but theory, research and repertoire will also become outdated, and necessitate new editions.

The dilemma remains that professional textbooks struggle to fulfil all the expectations with which they are met: to equip students for a professional field *and* for participation in an academic discourse (Hyland, 1999, p. 21). Whilst authors sometimes claimed that their books did both, teacher educators supplement their courses with other text types to fulfil the same expectations (Caspersen *et al.*, 2017). One may therefore ask whether a professional textbook should aspire more modestly to be an introduction to the research base, theories,

contexts and repertoire of a profession, and let other components of the teacher education programme take primary responsibility for developing students' participation in academic discourse.

Early on in this project we conjectured that there is a mismatch between the role of the professional textbook as an introductory text and the requirement that teacher education be research-based. This was not borne out by our material. In fact, both authors and educators emphasised the importance of the textbook for making research accessible and in explaining the relevance of that research for English didactics. Thus we came to see that a focus on research was not a threat to professional textbooks, but perhaps the strongest argument for their continued centrality in teacher education.

In conclusion, we hope that our exploration of educators' and professional textbook authors' perspectives in English didactics can be of value to teacher educators and authors in other school subjects, and indeed to other professions where textbooks are designated a central role in the construction of knowledge.

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41.
School Skills for the Swedish Subject? Swedish Teachers' Perceptions of Digital Learning Resources for Upper Secondary School

Caroline Graeske[*]

ABSTRACT

The use of digital teaching aids in Swedish classrooms has increased during recent years. Previous research has shown that digital teaching aids affect the work and roles of teachers. In this article upper secondary school teachers' use, and experience of digital teaching aids are problematized. The study is based on questionnaires and the answers are discussed in the light of the theoretical concept of teacher agency. The study coincided with the Covid pandemic when upper secondary schools went online and the results show that a number of teachers see digital teaching aids as a good supplement in teaching, but the study also highlights many challenges. Several teachers experienced technical problems and difficulties with navigation. Possibilities that the teachers pointed out concerned individual adaptation, self-correcting exercises, and visualizations of abstract phenomena. The result also shows that the teachers often prefer to create their own teaching aids. The teachers' agency thus expresses a certain resistance to digital teaching aids, and this in some colleges more than others. The mathematics teachers were most sceptical, while the L1 and L2-teachers were more positive. Moreover, the study shows that when the incentives are strong and when autonomy is limited, the use of digital teaching aids tends to increase, which seems to have consequences for the teachers' professional identity. The teachers' agency is thus both varied and complex and deals with organizational, economic, cultural and social structures. Hence the learning resources the students are given access can vary greatly, which in the long run can risk affecting the equivalence of the teaching.

KEYWORDS: *Covid; Digital teaching aids; Questionnaire; Teacher agency; Upper secondary school.*

Introduction

Teaching aids have existed in different forms in different eras. During the 19th century textbooks were a fundament for the content

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in teaching in Sweden, and ever since then, the textbook tradition has dominated. However, during the last decade digital learning resources are used more commonly, which presents new demands and conditions for teachers (Graeske, 2021). Digitalization of Swedish schools is a factor that brings new opportunities but also challenges (Sandén, 2021; Widholm, 2020). Teachers today operate in an environment where digital tools are very present, and the choices of teaching materials tend to become increasingly complicated. Digital teaching aids are a complex concept. In this context digital teaching aids which are published by publishers, and which follow the curriculum are in focus (cf. SOU, 2021:70).

Previous research has shown that textbooks and digital teaching aids are used to different extents depending on the subject and grade, while different views of knowledge, and subject cultures also play a role in practice (Graeske, 2021).

Researchers have also shown the complexity and challenges when teachers use several different types of teaching aids and learning resources, how analogue and digital learning resources are not always in harmony with each other in the classroom. The teacher initiates one way of working but the students choose another, which shows the difficulties with digitizing teaching (Tanner *et al.*, 2017; Grönlund *et al.*, 2018). This digital development risks, according to some researchers, developing an individualization process in the classroom, which partly means that each student creates her "own media ecological context" where large differences can arise between students depending on the resources they use (Tanner *et al.*, 2017, p. 190). Hence new teaching designs are also needed in Swedish teacher training where digital learning resources are marginalized (Roumbanis Viberg *et al.*, 2023).

However, teachers' use of teaching materials in the Swedish school system still constitutes a knowledge gap and a new governmental inquiry claims that more research is needed (SOU, 2021:70).

The aim in this article is to discuss and problematize upper secondary school teachers' use and experience of digital teaching aids. How do upper secondary school teachers use digital teaching aids? What opportunities and challenges do the teachers see with these and how did the Covid pandemic affect their approach?

Methods

In order to answer the above questions, a pilot study in the form of a questionnaire was conducted. The questionnaire was distributed to teachers in one of Sweden's largest upper secondary schools. It was designed in collaboration with the school's development manager and IT developer following a special offer where the teachers had the opportunity to use digital teaching aids, without additional cost to the principal, to develop their teaching. The study coincides with the Covid pandemic and some of the survey questions therefore link to the pandemic's impact on the use of digital teaching aids.

An advantage of questionnaires is that it is possible to reach a large population and they can also generate more truthful answers (Bryman, 2016). The questionnaire included a total of 23 questions about teachers' use of digital teaching aids in teaching and what opportunities and challenges the teachers experienced. In total 132 upper secondary teachers responded to the survey.

The empirical material was interpreted using theories about teacher agency. Teacher agency is a multifaceted concept, and, in this context, an ecological approach was used that emphasized contextual factors in conjunction with teachers' actions, agency, responsibility and professional judgment (Priestley *et al.*, 2015). Teacher agency is something a teacher does or accomplishes in a specific situation, and the ecological perspective means that actions are seen as reflexive and creative abilities that are affected by conditions and prerequisites in the situations where the action takes place. Thus, teacher agency is created in collaboration with a variety of factors and situations where teacher agency is governed by the capacity to act in a conscious direction. Accordingly, theories of teacher agency contribute to a deeper understanding of teachers' actions, deliberations, priorities, and choices and underline the importance of contextual factors such as culture and social and material structures (Priestley *et al.*, 2015, p. 19). In order to understand agency, then, the interplay between individual capacity and contextual factors, as well as intentional action, must be taken into account (Priestley *et al.*, 2015). Agency arises through interaction between the individual's capacity and the conditions provided by the environment. This means that previous life experiences or professional experiences affect the agency, as well as the conditions

in the present, but also intentions, desire and ambitions for the future are important. This means that structural factors in the form of beliefs, ideas, discourses, language, or social factors such as relationships, roles, power, hierarchies and trust, or material factors such as resources and physical environment, also shape the agency (Priestley *et al.*, 2015).

Results

The results show that 45% of all responding teachers are positive about using digital teaching aids and in the free text answers we find answers like: it has been "interesting" and "challenging to try new things" and "new tools". Digital teaching aids are "here to stay", "it is the future" and during the pandemic digital teaching aids were a good help when the teaching went online and became a "home school". Several teachers also saw the offer, which was supported by the principal, as very valuable in the specific situation:

> To have access to high-quality digital teaching aids (…) has been absolutely crucial to being able to maintain quality teaching during the pandemic.

The results show that the use of digital teaching aids increased greatly during the Covid pandemic and 60% of all teachers believe that the pandemic influenced their choice to use digital teaching aids. But the teachers also point out that a variation between analogue and digital material works best, where textbooks are the base:

> I think the best thing is the variety, being able to offer the students a real paper book but also being able to use different digital resources such as animations, simulations, videos, etc. But the book is the best foundation.

The empirical material illustrates large differences between the teachers' attitudes depending on the subject they teach. Teachers who teach L1 (mother tongue) and L2 (second language), are significantly more positive about using digital teaching aids than the mathematics teachers are: 47% of L1 and L2 teachers and 27% of the mathematics

teachers completely agreed with the statement that they have positive attitudes to use digital teaching aids. A massive 72% of L1 and L2 teachers also claimed that the use of digital teaching aids increased during the pandemic. Half of the mathematics teachers answered that the pandemic has increased their use of digital teaching aids. Nevertheless, the use of digital teaching aids remains occasional. Half of the L1 and L2 teachers, 50%, and the same number, 50%, of the mathematics teachers answered that they only use digital teaching aids in about one in four lessons. An L1 teacher writes in the free text answers: "Digital teaching aids are an excellent complement to regular teaching".

Furthermore, the survey shows that 74% of L1 and L2 teachers appreciate self-correcting exercises and diagnoses. The mathematics teachers, on the other hand, mainly appreciate functions related to visualization of concepts. 50% of the mathematics teachers consider this to be an added value. When it comes to the teachers' reflections on students' learning the mathematics teachers value "accessibility" which leads to students practicing on their own, at school but also at home, and the digital teaching aids work very well for those who need extra support. But most of the teachers want to use both analogue and digital teaching aids to get a clear picture of the students' learning.

L1 and L2 teachers also note that digital teaching aids are easily accessible and highlight their potential for students who need extra support.

> Some students have experienced it as a good extra exercise that strengthened their learning, as they can easily translate or get an explanation of words in texts or have them read aloud to hear pronunciation. Digital teaching aids allow students to practice at home on their own outside class time and thereby gain deeper knowledge and learning about the subject.

Both L1 and L2 teachers and the mathematics teachers thus experience added value, but they also point out challenges and shortcomings with digital teaching aids. In fact, 91% of the mathematics teachers answered that they had chosen analogue teaching materials in situations where they had to choose between analogue and digital teaching aids. L1 and L2 teachers also preferred analogue teaching aids and 56% answered that they prefer a textbook.

L1 and L2 teachers experience difficulties in navigating the resources: "(…) it can be very difficult to find the right material among all the tabs online (…) it is easier to refer to a certain page". Furthermore, the L1 and L2 teachers claim that it can be difficult for the students to know from one lesson to another where they "should start again". The teachers also pointed out difficulties for the students in finding the right material, which leads to a great deal of "wasted time". Another negative aspect is that the technology and logins sometimes "mess up", which is also a time waster.

However, the teachers did not only point out technical problems. The teachers also highlighted shortcomings in the assignments and declared that the digital teaching aids are sometimes "unpedagogical". Students "must use paper and pencil", they need textbooks. Digital teaching aids often encourage "trial and error behaviour", the resources require many "clicks" and it is easy to click incorrectly.

Several teachers also prefer to make their own teaching materials: "A good teacher makes her own material". Textbooks and digital teaching aids are complementary. "I prefer to create my own teaching materials".

Discussion

This pilot study points out certain opportunities of using digital teaching aids in upper secondary school, especially during the Covid pandemic, when teaching was conducted online. In line with previous research, the results show that there are differences between different subjects in how teaching aids are used in different subject cultures.

In light of theories about teacher agency, the teachers' use of teaching materials and choice of digital teaching materials all appear as an interaction between the teacher's intention and capacity and the conditions provided by the environment. In the teachers' choices, material, cultural and social aspects thus come into play and have significance for the teacher agency (cf. Priestley *et al.*, 2015). In this study, mostly L1 and L2 teachers have a positive attitude towards digital teaching aids and some of the teachers take a long-term view and believe that digital teaching aids are here to stay and that this is "the future"! But material aspects also influence their choices, and several

teachers point out material limitations, that the teaching materials are difficult to navigate and that the technology and connection at the school sometimes have problems.

The teachers also highlight certain added values with digital teaching aids. The mathematics teachers mainly see visualization of concepts as an added value, while L1 and L2 teachers see benefits like self-correcting exercises and diagnoses.

Additional factors that influence teachers' choices and actions are cultural aspects, teachers' ideas, beliefs and own knowledge, the principal's approach, as well as the requirement to act based on governing documents, goals and guidelines (Priestley *et al.*, 2015). Here it appears that the teachers choose to see digital teaching aids as a supplement and that these teaching aids are only used sporadically, but that the Covid pandemic increased their use. All teachers also pointed out shortcomings in the digital teaching materials and some claimed that they are "unpedagogical" and that they would rather make their own teaching materials that fit the teaching.

The survey shows that 14% of the responding teachers are very sceptical about the use of digital teaching aids. These teachers prefer to use their own material: "I have my own better teaching material that is more directly relevant to my subject and the associated tasks".

The fact that the teachers prefer to use their own material can be due to several things, for example material aspects, that the digital teaching aids are difficult to navigate and that there are flaws in the product, but it can also highlight the need for competence development and support in finding new teaching methods (Grönlund *et al.*, 2018). Some teachers also point out that they "have more to learn" when it comes to digital resources and that it is difficult to mix and switch between analogue and digital teaching aids. Nevertheless, it is clear that the teachers prioritize the use of traditional textbooks over digital teaching aids when they are forced to choose, and the teacher agency to opt out of digital teaching aids can be seen as a resistance promoted by both personal beliefs and confidence in one's own teaching profession and capacity.

Most teachers seem to choose textbooks that are already well implemented in their teaching and teaching aids that they feel comfortable with, but the Covid pandemic made many inclined to try "new things" and "new tools".

Accordingly, the study shows that when the incentives are strong and when autonomy is limited, i.e., when the professional space is

reduced, as during the pandemic, the use of digital teaching aids tends to increase, which can have consequences for the teachers' professional identity (cf. Roumbanis Viberg *et al.*, 2023). During the pandemic, the teachers were forced to make certain deviations from their regular teaching in order to teach online and conduct "home school", and the digital teaching aids came to fulfil an important function in this particular situation.

However, several teachers claim that they need to learn more. The results of this study thus confirm the complexity of being a professional teacher in times of digitization, while also highlighting a paradox where the teacher agency tends to both enable and hinder self-development and also that of the organization (cf. Roumbanis Viberg *et al.*, 2023). It is clear, however, that the teacher's agency is decisive for which students are offered digital teaching aids, which in turn can have consequences for the school's equivalence (SOU, 2021, p. 70) and for the digital skills of teachers and students.

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42.
Teachers' Perceptions of Digital Learning Resources in School Education in the Canary Islands

Sebastián Martín Gómez[*]

ABSTRACT

This research focuses on the perceptions of Primary and Secondary Education teachers in the Canary Islands (Spain) regarding the use of digital learning media and resources. The level of use of both digital materials and textbooks is studied in depth by collecting quantitative data. The intention is also to learn about the application of active learning methodologies that involve the use of these digital media. The study involved 1131 teachers from the autonomous community of the Canary Islands, who participated in data collection by means of a quantitative questionnaire, and these data were analysed in SPSS25. The results show that almost 80% of primary and secondary school teachers use digital teaching materials almost daily, while only 30% of the teachers that completed the survey continue to use textbooks either in paper or digital format at least several days a week. In addition, many develop active methodologies with digital technologies. These data confirm the initial hypothesis of a high level of integration of digital media in the Canary Islands school system.

KEYWORDS: *Digital resources; Digital learning resources; School education; Teachers.*

Introduction

The shift from textbooks to digital teaching materials has meant a transformation in the way of looking at teaching for the educational community of the Canary Islands school system (Area, 2020; Consejo Escolar de Canarias (School Board of the Canary Islands), 2019). It is of interest to know how teachers apply these digital resources, as well as their perceptions in order to know how this evolution is experienced in the reality of educational practice. A quantitative data collec-

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tion was carried out in questionnaire format, in order to analyse the perceptions of teachers, both in Primary and Compulsory Secondary Education. This instrument focuses on the use of digital educational resources, especially those of a public nature offered by the Regional Ministry of Education.

This study aims to provide answers to questions such as: How often do teachers use digital educational resources? At what moments of learning? Do they combine textbooks and digital media? Do teachers create digital materials? What are the perceptions?

It is assumed that there is a wide range of digital educational resources available for teachers and those they have introduced them into their teaching practice on a regular basis.

Theoretical Framework

As we can read in Sanabria and Area (2011), the Autonomous Community of the Canary Islands has a primary interest in the integration of technologies in the school system. Since the 1980s, several plans have been implemented to promote the didactic use of digital media in classrooms at different educational stages.

Currently, all educational policies for the integration of digital technologies in the school system of the Canary Islands have been restructured in the Plan for Digital Education in the Canary Islands in the 21st century. A macro project published at the end of 2020 that is presented as the compilation of a long history of educational integration of ICT and all the projects, programmes, services and digital resources made available to teachers of non-university centres in the Canary Islands. The Department of Education, Universities, Culture and Sports of the Government of the Canary Islands, through the Educational Technology Area of the General Directorate of Planning, Innovation and Quality, has designed this plan, whose pillars are pedagogy, technology and educational spaces.

As can be read on the project's website (Educational Technology Area, 2021), the plan includes measures and strategies to offer tools, services, support, digital resources and advice to the educational community of the islands. There are three general objectives:

- To respond to educational contingencies resulting from the Covid-19 pandemic.
- To move towards a standardization of the use of digital resources, devices and online communication and collaboration tools by teachers, students and families. This is intended to promote e-inclusion, e-health, e-learning and digital literacy.
- To promote the use of digital didactic tools and materials offered by the administration itself (counselling).

It should be noted that this plan is being considered for the first time as an objective of the Strategic Plan of the Department of Education of the Government of the Canary Islands.

From Textbooks to Digital Learning Resources

The Internet and virtual communities, as well as intelligent technologies, have taken part in the process for the preparation, distribution and consumption of the information. We live in an unprecedented moment in which online training, both in formal and non-formal environments, is becoming part of any educational process. As Area *et al.* (2008) state, there are now new players such as mobile telephony, which are changing our experience in multiple areas such as learning.

Taking into account the work of Trujillo Sáez *et al.* (2022), it should not be forgotten that in educational innovation processes, there are different resources or tools that must be considered as part of the learning process: devices, teaching-learning materials and textbooks. The entry of devices into the classroom, as tools that facilitate the development of new teaching-learning materials, is directly linked to the loss of the positioning of the textbook as the central tool of the educational process, also supported by the emergence of new active teaching methodologies. Thus, technological media are part of the reality of innovative centres, which thus articulate their learning ecology to a large extent around technology: computers, tablets, smartphones, digital whiteboards, Chromebooks, Google ecosystem applications, digital platforms, social networks, blogs, radio and television, digital newspapers, 3D printers, robots, etc. The technological and digital media are drawn as tools linked to the methodological lines that are developed in innovative centres, as can be seen in the

study: project-based learning, service-learning, cooperative learning, integrated learning, action-based learning. They also stand out as tools of interest to promote autonomy, critical thinking and creativity in students.

This integration of digital technologies confirms what has already been stated by Rodríguez and Moreira (2017); a movement is emerging in the field of education, leading to the slow disappearance of paper textbooks in classrooms, with their replacement by digital educational content platforms.

Methodology

Taking into account the literature consulted, the objectives of this research are set out, focused on the perceptions of teachers in the Autonomous Community of the Canary Islands, on the use of these digital educational resources.

Objectives

- To know the frequency with which teachers of Primary and Compulsory Secondary Education in the Autonomous Community of the Canary Islands use digital educational resources.
- To determine the frequency with which teachers of Primary and Compulsory Secondary Education in the Autonomous Community of the Canary Islands use textbooks.
- To know the perspective of teachers of Primary and Compulsory Secondary Education of the Autonomous Community of the Canary Islands on integrating digital educational resources and active learning methodologies.

Participants

A total of 1131 teachers from both educational stages were involved in order to carry out this study. The following data are presented in order to know the population sample with which we have worked.

In the distribution of teaching staff by age, the highest percentage corresponds to the 45-54 age range with 41.6%; followed by the 35-44 age range (27.1%), 55 or older (21.9%), 25-34 years (9.1%), and less than 25 years (0.3%).

Regarding the gender distribution of the teaching staff participating in this study, 63% of the respondents were female, and 37% were male. On the other hand, the subjects taught by these teachers were also taken into account (**Fig. 1**).
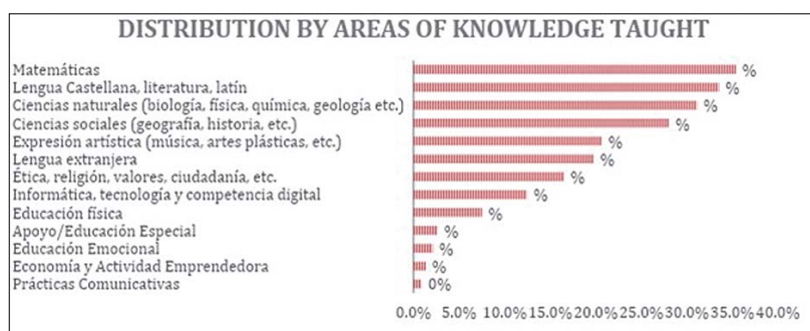
Figure 1. Distribution according to the areas of knowledge taught.

Instrument

A questionnaire was designed and validated by experts in the field of research. This instrument has 37 items and different dimensions: identification data, use of digital educational resources, effects of didactic use, creation of materials and use of institutional platforms and commercial materials. It was undertaken online and was carried out with the collaboration of the public body Área de Tecnología Educativa (Educational Technology Area).

After the data was collected, quantitative analysis was performed using SPSS25 software:

– Analysis using frequency distribution tables and descriptive statistics.

– Creation of contingency tables.
– Calculation of Chi-square and Contingency coefficients, and Kruskal-Wallis and Mann-Whitney U statistics.

Results and Data Discussion

The main results are presented in accordance with the research objectives expressed above.

Frequency with which Primary and Compulsory Secondary Education Teachers in the Autonomous Community of the Canary Islands Use Digital Educational Resources

The results show that the level of integration of digital educational resources and devices in the classrooms of Primary and Secondary Education levels in the Canary Islands is at an advanced stage and users have the perception of regularly working with these technologies in their teaching practice.

It can be seen that 40.7% of the teachers interviewed state that they use these resources every day and 38% several days a week. To a lesser extent, 15.7% do so several days a month and 5.5% sometime during the term. Only 0.1% indicated that they never use digital resources. These results show that practically 80% of primary and secondary school teachers use digital teaching materials almost daily. With these figures it can be inferred that digital resources are present in classrooms and are part of the day-to-day teaching practice.

When taking into account the gender of the teachers, the frequency of use is similar in both genders. **Figure 2** shows how the percentages remain similar for all the response options. Based on the number of female and male teachers who responded to the survey, it can be said that there are no differences based on gender.
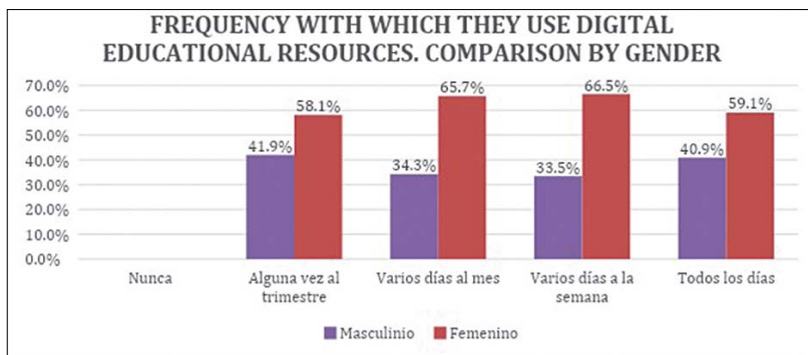
Figure 2. Frequency of use of digital educational resources. Comparison by gender.

It can therefore be affirmed that there is a high level of use of digital educational resources among primary and secondary school teachers in the Canary Islands.

Frequency of Use of Textbooks by Teachers of Primary and Compulsory Secondary Education in the Autonomous Community of the Canary Islands

The analyses yield relevant data on teachers' use of textbooks. 30.3% use paper books several days a week, while 21.4% indicate that they never make use of this resource. 16.2% sometimes use printed books during the course, 16.1% several days a month, and 16% use them every day. In the case of books in digital format, similar results were found: 27.4% use them several days a week, 20.6% never use digital books, 19% use them sometime during the course, 16.5% use them several days a month, and 16.4% use them every day. These data can be seen in a combined form in **Figure 3**. It is observed that about 30% of the teachers interviewed continue to use textbooks either in paper or digital format at least several days a week. This means that the vast majority of teachers do not use books on a daily basis and that digital resources are gaining more prominence.
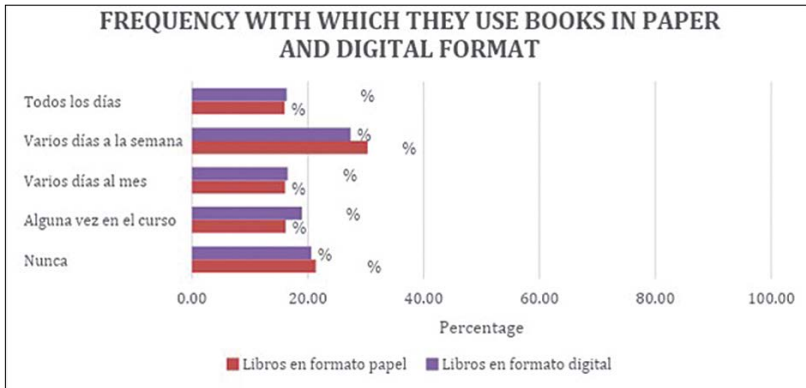
Figure 3. Frequency with which they use books in paper and digital formats.

It is also noteworthy to know the times in which teachers make use of these digital media: a large part of teachers make use of digital materials in the learning planning phase, at the beginning of a learning situation or sequence and in the content presentation phase. On the other hand, they are less used during evaluation times, being applied by only 40% of the teachers. On the other hand, 60% of teachers have created digital resources for their students' learning.

Perspective of Teachers of Primary and Compulsory Secondary Education of the Autonomous Community of the Canary Islands on Integrating Digital Educational Resources and Active Learning Methodologies

The aforementioned data are directly related to the perspective that teachers in the Canary Islands have on the use of these resources and active learning methodologies. It shows how more than 50% of primary and secondary school teachers are using a PBL (Project Based Learning or Problem Based Learning) methodology, developing teaching and learning experiences supported by ICT. In addition, the methodology based on gamification of learning is the second most used by teachers in the Canary Islands. It can therefore be seen, how

active methodologies with integration of digital resources are gaining presence in the educational system.
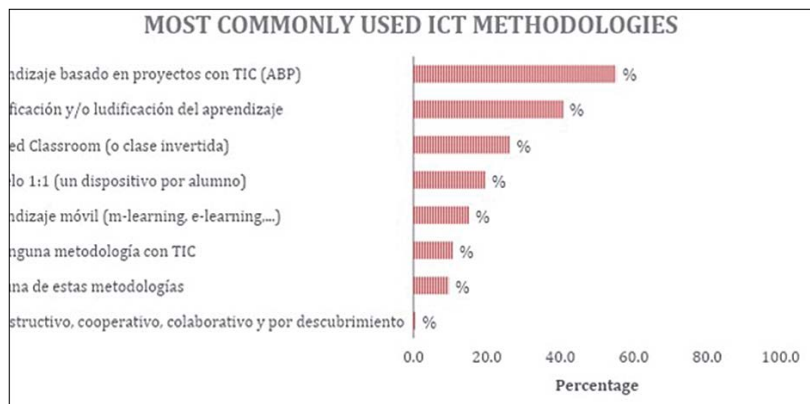
Figure 4. Most commonly used ICT methodologies.

Conclusions

The digital transformation of classrooms in the Canary Islands school system is visible, not only by the introduction of materials in digital format but also by the integration of active methodologies mediated by technology. In this way, teachers implement digital resources to improve classroom practices and create spaces rich in learning where students develop competencies in a practical way (Trujillo Sáez *et al.*, 2022). This digitization process was already addressed by Peirats, Galbaldon and Marín (2018), in which they concluded that training in the use and creation of these digital media is necessary for this scenario to be complete. Area (2019); and Zinger, Tate, and Warschauer (2017) also agree on this favourable view toward these resources among educational agents. However, the methodology must also be present in the updating process.

This study confirms the initial hypothesis, in which a positive acceptance of the use of digital educational media and resources by teachers in the Canary Islands was proposed. Other research such as that of San Nicolas Santos and Bethencourt-Aguilar (2019) in which

teachers are given a voice coincides in some aspects: a unified vision in which they advocate combining textbooks and educational resources in classrooms and the positive perception about methodologies and classroom experiences in which the students themselves should create digital products. Gallardo *et al.* (2019) proposed a similar research in other regions of Spain, with a similar result: a positive reception by teachers of educational centres, located in different autonomous communities. They agree that using these resources improves student interest and motivation.

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43.
Themes in Teacher Training: What Do the Pedagogical Manuals Published Since 2010 Say?

Léia de Cássia Fernandes Hegeto[*] and Yan Soares da Silva[**]

ABSTRACT

The objective of this research is to analyse the themes addressed in Pedagogy and Teaching Practice books published since 2010. These pedagogical manuals provide insights into the disciplinary code of Pedagogy and Teaching Practice, as outlined by Cuesta Fernandez (1998). The research question addressed in this study is: What changes have been proposed in teacher education in recent years? The chosen methodology employed a qualitative and exploratory approach, involving the analysis of summaries from 14 books. The findings revealed several prominent themes, including Initial and Continuous Training, Early Career Development, Researcher and Reflective Teaching, Curriculum, School Culture, Professionalism and Teacher Roles, and Innovative Teaching Practices. These themes shed light on the intricate elements surrounding Curriculum, Pedagogy, and Teaching Practice.

KEYWORDS: *Pedagogical manuals; Teacher training; Teaching practice.*

Introduction

The research aims to explore how to organize the school and teaching practices during each period. It begins by addressing the question: What themes are suggested in the manuals/books published since 2010? The goal is to examine the themes and discussions included in these materials, specifically in relation to the pedagogical and curricular field, as well as their implications for classroom work.

Literature is considered an essential component of both initial and ongoing teacher training, regardless of the teacher's knowledge or level of teaching experience. It is important to note that the books

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referred to in this research can also be referred to as pedagogical manuals, as they are designed to provide guidance and enhance the teacher's performance.

The choice of the theme is justified by the need to revisit the subject and address research gaps regarding manuals/books focused on teacher training in contemporary times. It is recognized that literature plays a significant role in training and preparation for teaching practice. The research consists of a collection of qualitative studies aiming to comprehend elements of school culture, considering the manuals as cultural artifacts (Choppin, 2004). The hypothesis proposed in this study is that manuals have served as mediators and artifacts within school culture and teacher training programs in Brazil, particularly in pedagogical and teaching practice disciplines.

In the process of interpreting the ideas and concepts presented by the authors, the manuals/books can serve as a reflection of school culture and the expectations surrounding Pedagogy and Teaching Practice in recent years. The manuals/books are both products and contributors to the cultural context expressed in educational programs. The research highlights that these pedagogical manuals/books can also be seen as components of the disciplinary framework of Pedagogy and Teaching Practice (Cuesta Fernandez, 1998).

It can be affirmed that the research was grounded on the knowledge and discussions of the themes presented in the manuals/books. Specific characteristics were ingrained in both the readings and the subjects of the teacher training courses' curriculum. The notion of disciplinary code is understood as an essential component of school culture and is defined by Cuesta Fernandez (1998, p. 57) as follows:

> We define the disciplinary code as a compilation of ideas, values, assumptions, regulations, practices, and routines (both explicit and implicit) that often manifest as speeches of legitimacy and public discourse regarding the educational value of history. These speeches serve as a guiding force for teachers' professional practice. In essence, the disciplinary code represents a collection of prevailing ideas, discourse, and practices in the teaching of history within the school environment.

It is acknowledged, therefore, that the content found in the discipline and disseminated through the manuals has exerted influence on teaching during different periods, proposing rules and norms, legitimizing themes and discourses within teacher training.

Context and Research Problem

When examining manuals/books for teachers, it is essential to consider not only their materiality as objects, but also the meanings that arise from their integration into social processes, particularly those involved in education. Therefore, the aim is to highlight the contents addressed to teachers, allowing for an understanding of the references, bibliographies, and ways of conceptualizing space, school time, and the challenges faced by educators. By focusing on a collection that spans approximately a century and a half, it is important to note that these books share a common goal of preparing future teachers (Garcia & da Silva, 2019).

The manuals/books, in addressing issues related to teacher culture and practice, serve as revealing elements of pedagogical thinking and the organization of teaching and school activities. The numerous editions and reprints indicate that teachers have relied on these resources both as support and guidance for their practice. These readings reflect ideas and expectations regarding the role of teachers in each period, thus contributing to a better understanding of specific curriculum issues and developments in teacher education in recent years.

Method

The qualitative and documentary research commenced with an exploratory study of summaries from pedagogical manuals/books published since 2010. Fourteen summaries of Pedagogy and Teaching Practice manuals/books, authored by teachers at all levels of education, were analysed to gain an overview of the themes addressed in these publications. The summaries were selected from online platforms such as Google Scholar and virtual bookshops. Descriptors used in the search included Pedagogy, Teaching Practice, Teaching, Pedagogy and Classes, Knowledge, and Teacher Training. Books focusing on specific subject areas or methodologies, such as Geography Teaching Methodology, Portuguese Language Teaching Methodology, and Mathematics Teaching Methodology, were excluded. Similarly, manuals/books with specific thematic titles like Education for

Technologies, Special Education, Environmental Education, and Psychology of Education were also omitted.

It was selected books published from 2010 that had in the title the word teacher training or titles directly related to teacher training or teaching practice. It was discarded books directed to specific areas or subjects in the area of education, such as, Geography, History, among other areas. To find the 14 books analysed, the following scientific databases and virtual bookshops were used: Scielo, Redalyc and Periódicos portal Capes, as well as the virtual bookshops Amazon, Estante Virtual and Google Books. These sources were essential for the research and selection of the materials that made up the sample.

Content analysis, following Bardin's (2011) technique, was applied to the selected summaries for data analysis. The initial stage involved a preliminary analysis and thorough reading of the summaries to explore the material and identify coding units. The most frequent themes for analysis were determined during this stage. Subsequently, the results were categorized and interpreted to identify recurring themes and the emphasized knowledge in recent years' teacher education.

Results

The selected Pedagogy and Teaching Practice manuals/books are characterized by their focus on the debate surrounding pedagogical practices and knowledge, taking into consideration the multidimensionality of teaching. In research conducted in Brazil from 1980 onwards, Pedagogy has been recognized as a Science of Education or Pedagogical Science that serves as a foundation and dialogue partner for teaching practice, as stated by Franco (2008).

Pedagogy plays a crucial role in organizing education in relation to time and space, contributing to ongoing reflection on the teaching profession and the most appropriate goals and methodologies. Reflecting on the covered themes allows us to comprehend the emphasis placed on educational practices and the objectives established in each historical moment. Table 1 presents the 14 manuals/books (B) selected for the research.

Book	Manual/Book	Coordinator	Publisher	Year
B1	Teaching practice: the Reggio Emilia approach and working with projects, portfolios, and training networks	Maria A. Proença	Panda Books	2019
B2	The Beauty of Teaching and the Identity of the Teacher in Contemporary Times	Marinalva V. Barbosa	Mercado de Letras	2015
B3	Innovative practices in teacher training	Marli André	Papirus	2016
B4	Methodological Contributions to Teaching Practice – Theories and Reflections on Teaching	Gislene A. da S. Barbosa	CRV	2018
B5	Teacher Training – Trends, Knowledge, and Practices	Kelen Dos Santos Junges	CRV	2017
B6	Teacher Work and Teaching Knowledge	Romilda Teodora Ens	Universitária Champagnat	2012
B7	Why I Teach as I Teach: Narratives of a teaching practice	Gleyds Domingues	Santos	2017
B8	Pedagogy and teaching practice	Maria Amélia Franco	Cortez	2012
B9	Teacher training: Pedagogical theory and practice	Jacques de L. Ferreira	Vozes	2014
B10	Pedagogical concerns about teaching practice	Suzana Schwartz	Vozes	2016
B11	Teacher Training and Pedagogical Practices at School	Maria Carmen Tacca	Alínea	2017
B12	The teaching career: training, knowledge and practices	Otília M. Dantas	Paco e Littera	2019
B13	Essays on the classroom: narratives and reflections on teaching	Márcia B. Araújo	Ibpex	2010
B14	Teaching, Training, and Practices: Experiences and Research	Jussara S. Pimenta	Paco	2019

Table 1. Selected Manuals/Books for research.

In these manuals/books, the most frequently cited themes in the summaries are: Initial and continuing teacher education; Beginning

of the teaching career; Researcher and reflective teacher; Innovative practices in teaching; School culture; Professionalism and role of the teacher; Curriculum. These highlighted themes indicate priorities within the scope of training and teaching practice, representing the disciplinary code of Pedagogy and Teaching Practice in recent years.

The first theme, "Initial and continuing teacher education", is addressed in 12 out of the 14 selected manuals/books. Various topics are discussed, including policies for teacher training, the role of technology in teacher training, training in the PIBID program (Institutional Program for Scholarship for Initiation to Teaching), and training for early childhood education, particularly in literacy and reading. The book 3 emphasizes the importance of theoretical training that takes into account the complex and diverse dimensions of the political, social, cultural, and personal aspects that intersect with practice. Researchers emphasize that the school is a privileged space for teachers' ongoing education. The abundance of summaries and chapters dedicated to this theme underscores the significance and essential nature of initial and continuing education in the work of teachers and pedagogues.

Theme 2, "Beginning of the teaching career", is addressed in 2 out of the 14 selected manuals/books. Topics covered include assessment in initial practice, reflections on the beginning of the teaching career, field diaries, and pedagogical tools for early-career teachers. The entry into the teaching profession is a critical moment for teachers, often accompanied by doubts and tensions. Support from the pedagogical team and experienced teachers is usually expected during this transition. The use of pedagogical tools and keeping a field diary to record classroom activities can serve as alternatives for novice teachers. During the initial years of their teaching career, educators strive to incorporate, understand, and integrate into the teaching culture and school environment, becoming familiar with the professional codes and standards.

Theme 3, "Researcher and reflective teacher", appears in 2 of the 14 selected manuals/books. It addresses issues such as researching as a teacher, research and teaching practice, pedagogical processes of action research, research analysis, research as a fundamental element of teacher training, and the formation of the teacher's identity.

The debate emphasizes the importance of being a critical and reflective professional as a prerequisite for being an effective teacher.

The author emphasizes the notion of being a researcher, not only in an individual sense but also in terms of the collective responsibility within the school. Being a teacher-researcher involves formulating hypotheses, seeking justifications, analysing data, and examining evidence. The training of reflective teachers begins during their undergraduate studies, recognizing that education students learn both teaching methods and how to reflect on their teaching practice. Teacher training cannot be disconnected from research and reflection, including the use of action research, as it promotes continuous learning and improvement.

Theme 4, "Innovative practices in teaching", is present in 8 of the 14 selected summaries. It addresses topics such as technology and teaching, tools for working with deaf students, the development of social and emotional skills, the flipped classroom approach, conceptual networks/maps, and portfolios. The inclusion of this theme in the books reflects the changes and innovations in teaching practices in recent years. The integration of new technologies, the use of media, and the adaptation of innovative methodologies and strategies in the classroom, reflect a movement towards reinventing the educational system. Books discussing inclusive practices advocate for respecting cultural diversity and promoting greater student participation in pedagogical processes. The convergence of in-person and virtual learning represents an opportunity for innovative practices, fostering a broad discussion on digital communication and its implications for education in the digital age. Techniques such as the flipped classroom and the use of networks and mind maps can be employed as effective teaching tools.

Theme 5, "School culture", appears in 5 of the 14 selected summaries. Issues such as: Popular cultures; Times and spaces of teaching; Afro-descendant religions; The deaf person and the educational process; Violence at school; School discipline; Field education; Connections between school and society. School narratives. The school has its own marks of its culture, which were historically built and are internalised and incorporated by teachers throughout their professional life. The educational institution presents a diversity of cultures, races, ethnicities, and customs, and this dimension should be present in the pedagogical meetings and training. Consequently, the educator finds him/herself in the midst of diversity, where the individuality of each student is found, demanding more and more an attitude of ap-

preciation and respect. For example, the deepening and reflections on the theme of rural education and Afro-descendant cultures as it appears in the manuals/books.

Theme 6, "Professionalism and the role of the teacher", is addressed in 13 out of the 14 summaries. These chapters explore topics such as the contemporary characterization of professionalism, teacher identity, teaching practices and knowledge, the nature of teaching work, the relationship between theory and practice, new perspectives on teaching work, the construction of teaching professionalism, the role of the teacher in literacy and numeracy education, knowledge production and dissemination, and the teacher's role in shaping the Political Pedagogical Project. The substantial number of books addressing this theme highlights the significance of professionalism and its influence on the teacher's performance. It is noteworthy that teaching professionalism is shaped by the interplay between theory and practice and the production and dissemination of knowledge, as emphasized in the analysed pedagogical manuals.

Theme 7, "Curriculum", is addressed in 10 out of the 14 selected summaries, encompassing a total of 54 chapters. These chapters delve into various aspects such as curriculum planning, evaluation, literacy, teaching resources, methodologies, content, and didactics. It is crucial for teachers and educators to be aware of the implicit and explicit interests embedded in official curriculum proposals. Engaging in readings and reflections about the social function and challenges of schooling can foster more committed and dedicated actions from teachers and the pedagogical team. Research on curriculum consistently emphasizes the importance of advocating for principles such as justice, equity, and social inclusion. The inclusion of the curriculum theme underscores the recognition that there are numerous challenges in current curriculum practices, necessitating efforts to promote meaningful teaching and learning experiences that foster students' creativity and autonomy. Embracing diversity as the starting point, while acknowledging the non-neutrality of the cultural, political, and social context, is crucial. Furthermore, valuing topics relevant to students and teachers and fostering interaction within the school environment can contribute to the creation of a dialogic, fair, and inclusive space.

Discussion

The research findings indicate that the themes and knowledge addressed in teacher education in recent years reflect a complex interplay of elements encompassing curriculum, professionalism, and teacher training.

The examined themes provide valuable insights into the significance, emphasis, interpretations, and uncertainties within the field of Pedagogy and Teaching Practice. These identified themes can be regarded as disciplinary codes that have shaped the discourse and practice of Pedagogy and Teaching Practice in recent years. It can be asserted that the first two decades of the 21st century have been characterized by a diverse range of themes related to the challenges encountered in daily school life, the recognition of diversity, and the necessity for contextually grounded and dedicated pedagogical practices.

Teacher training has consistently played a crucial role in contemporary teaching practice, particularly in light of the evolving demands within the classroom. Manuals and books need to emphasize the essential elements that contribute to greater professional recognition, including themes that acknowledge the significance of culture and a curriculum that embraces diversity.

The frequent appearance of certain themes in teachers' readings indicates the existence of a disciplinary code within the field of Pedagogy and Teaching Practice. This disciplinary code emphasizes the importance of initial and continuing education, while also reflecting elements such as teaching strategies, curriculum development, professionalism, and cultural awareness. In this study, we argue that these elements are indispensable for an effective teaching process.

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44.

The Impacts of the New Nationwide Curriculum Proposal in Brazil on Teachers' Use of Textbooks

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ABSTRACT

Textbooks are very present in Brazilian schools. The country has the largest public policy in the world for the distribution of these materials to public school students: the National Program of Books and Teaching Materials (in portuguese Programa Nacional do Livro e Material Didático – PNLD). This policy underwent a reformulation in 2017 and began to have as one of its main objectives the implementation of a new curriculum proposal of national scope. The research aimed to analyze perceptions of elementary school science teachers about changes in textbooks after the changes. The results show that teachers are concerned that the new collections are more orientated towards delimiting and indicating skills and competences – so that they would be approved considering the new objective of the PNLD – than actually offering more suitable material for use in schools. This contributes to an even greater standardization of teaching collections.

KEYWORDS: *Textbooks; Nationwide curriculum; Teachers.*

Introduction

Textbooks are widely used in Brazilian schools. In Brazil, an extremely significant public policy has been implemented for the distribution of teaching materials to students, through the Programa Nacional do Livro e Material Didático (PNLD). Thanks to the PNLD, all students in Brazilian public schools receive free textbooks. These textbooks are evaluated and approved according to their pedagogical and content characteristics. Some Ministry of Education and Culture (MEC) teams associated with the programme are in charge of this evaluation. According to this condition, it is possible to identify

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three main agents responsible for the introduction of textbooks into schools: the Ministry of Education (MEC), publishers and teachers. Each of them has its own tasks in the PNLD system. Generally, (1) the MEC produces and publishes public notices on standards and rules, guidelines for the production of textbook collections applicable to different subjects; (2) publishers produce teaching collections and submit them to the PNLD system; (3) these collections are evaluated by working groups set up by the MEC; (4) approved textbooks constitute the materials that teachers can choose to adopt in their classroom.

The distribution of textbooks by the PNLD is regulated by law. According to the PNLD, textbooks must contribute to improving the learning process in public schools by ensuring the quality of the teaching materials used. They also contribute to the democratization of access to information sources and encourage the habit of reading, as well as they support the professional development of teachers (Brasil, 2017). The PNLD was reformulated in 2017 to embrace an additional objective, namely the implementation of the proposed new national disciplinary matrix, the so-called Base Nacional Comum Curricular (National Common Curricular Base), also known as the BNCC.

The BNCC document was conceived, elaborated and structured without the participation of teachers in this process. It was defined as the national reference for the formulation of subject teaching guidelines throughout the country, for both private and public schools, including municipal and state schools and other pedagogical institutions. Therefore, it was a top-down political act and teachers became aware of its existence when it was implemented in schools.

The guidelines for teaching different subjects are contained in the BNCC; an update taking into account teachers' opinions would have been appropriate. Considering the lack of investment in teacher training to prepare to discuss this document, the PNLD became one of the main agents in the implementation of the BNCC. The purpose of this project was to indicate what the BNCC's proposal was for teachers regarding textbooks. In other words, textbooks were to be the reference to help educators better understand the new forms of teaching to be implemented. In reality, teachers were seen as mere executors of what was indicated by the BNCC and made available in the textbooks. This process has ended up changing the structure of textbooks. If textbooks were not approved by the MEC, if they did not

follow the BNCC guidelines, they would not be purchased or distributed to schools.

The purpose of the present research was to analyze primary science teachers' perceptions of textbook changes due to the implementation of the BNCC by the PNLD.

Methods

The survey conducted with teachers followed the qualitative methodology. According to Stake (1983), qualitative research is based on data collected from a small number of cases but involving a large number of variables. This approach allows us to better understand certain aspects of reality and its variables, as well as to draw a dynamic picture supported by the information gathered during teachers' interviews.

For this reason, it was decided in the present study to interview science teachers working in 4 and 5 grade of primary school, in municipal, state and federal public educational institutions. This decision was made in order to better analyze the relationship between teacher and textbooks, within different school context, working conditions and organization, as these variables differ greatly in the three educational settings (municipal, state and federal).

Criteria to select teachers to participate in the interviews were (1) teaching Science in the late years of primary school; (2) being part of either the municipal, state or federal public-school system in Florianópolis City, and (3) being available to participate in the research. Both early and late-career teachers were approached, as well as those with temporary and permanent working contracts. This broad sample allowed covering different elements in the analysis applied to relationships set between teachers and their didactic materials; i.e., identifying whether such relationships, or expectations, differ between more and less experienced teachers.

The number of interviewees met the recommendations by Minayo *et al.* (2009); according to him, in qualitative research, the idea of sampling is not suggested, for the "question is not the subject itself, but its representation, knowledge, practices, behaviors and attitudes". Therefore, the number of teachers was not determined, at first; they

were progressively included in the study. The interviewing process ended when "the concepts, explanations and meanings addressed by the subjects started to be regular" (Minayo *et al.*, 2009). In total, 19 interviews were conducted.

The interviewing phase schedule met the beginning of the social distancing imposed by the coronavirus Sars-CoV-2 pandemic. Therefore, all interviews were carried out through video chatting, in virtual spaces of the Google Meet digital platform. Only audio-recordings were filed – it was previously authorized by the participants. All participants signed the Free and Informed Consent Form, which was also ready before each interview. Different remote document signing means were provided.

The interview followed a semi-structured script, based on a basic scheme of topics. The interviewer could introduce some adjustments during the interview – it was not necessary following the questions and their sequence in a strict way. Interviews were fully transcribed. The most important quotes observed during the transcriptions' analytic reading related to each topic were highlighted, so that the presented results would take into consideration the goal of identifying the perceptions of Science teachers of late years of elementary school about changes in textbooks after BNCC's implementation as PNLD aim, as well as their impact on how they use these materials.

Results

Based on the results, most teachers identify two "eras" regarding the structure of Science textbooks, namely: the time before and after BNCC. This division also determines how they use textbooks. Before BNCC's implementation, all teachers reported to use different didactic materials in their classrooms, rather than just textbooks, such as magazines, scientific articles, news reports, anatomic and astronomic models, movies, documentaries, videos, non-didactic books, literature books, data projections, among others. Teachers also stated to elaborate their own materials, like flowcharts and texts, to work with their students.

Most participants reported to use textbooks selected based on criteria that meet the aims they wanted to reach by working with a

given subject. Textbooks were the very basis to recommend readings and activities for students, as well as to help teachers to elaborate their own materials. However, according to teachers' reports, this practice became even more frequent after the changes made to textbooks, so they could properly follow BNCC. Some participants stated that they stopped using textbooks; they used to consult at the time to plan activity for their classes. Interviewees declared that textbooks suffered with setbacks, because, nowadays, they are like manuals to be followed, regardless of school context. This process makes teaching even more difficult and rules out teachers' autonomy.

Interviewees are worried that new didactic collections would only focus on competences and skills in order to effectively provide a more appropriate material to be used in schools, since they would be approved based on PNLD's new goal: implementing BNCC. This approach contributes to greater uniformity of textbook collections. Furthermore, teachers' argument lies on the fact that textbooks' language became too distant from students', and it impairs their use. Some interviewees declared to have stopped recommending texts or activities provided on textbooks, because, rather than helping students, they can hamper their learning.

Thereby, interviewed teachers' evaluation of the textbooks approved by the last PNLD, which follows the BNCC's standards, is quite negative. This viewpoint was unanimous among interviewees, both among early-career and experienced teachers. Participants declared that new textbooks somehow plaster their practice, because they are distant from students' realities and their propositions are poorly structured.

Discussion

The herein scenario points out that textbook is a common tool in Brazilian classrooms. Textbooks are available in public schools for students and teachers due to the public policy known as PNLD. Data analysis allowed discussing what Pérez (2012) features as the two teaching autonomy spheres: individual and collective. Both spheres were approached, and interviewees argued about how each one affects the teaching process when it comes to their relation to these textbooks.

Individual autonomy refers to decisions and relationships teachers establish in the classroom, activities they perform, didactic materials they choose, approaches they develop or to what they prioritize in their lesson plans. Changes and adaptations teachers make in their work, by taking into consideration students' reality or their teaching goals concern individual autonomy, i.e., decisions made by the professional, only. It is important to point out that individual autonomy is always observed, even when teachers receive their discipline programs, but they do not strictly follow them.

Individual autonomy emerges from the interviews when respondents stated that they do not strictly follow textbooks in their teaching sequences; teachers stated that they use textbooks by subjecting them to questions and highlighting critical aspects. Even novice teachers stated that they analyze textbooks from critical perspectives and that textbooks are only a support to help them reflect on their lessons. However, it is not only textbooks that guide their work in the classroom. Furthermore, teachers express reservations about the new textbook structure. All participants showed great concern about the use of content materials that do not seem to make sense to the students and do not always respond to their reality. According to their assessment, after the implementation of the BNCC, textbooks are going in the opposite direction to the one desired. This alienates teachers from textbooks, at the time of teaching planning as well as at the time of individual use by students for study activities.

The *collective autonomy* sphere, in its turn, is expressed by interactions among teachers, educational public policies, administrative school decisions and education secretaries. Teachers do not have their space secured, or decision-making power, in the collective sphere. Thus, textbooks can be considered an object to limit teachers' collective autonomy when it is directly related to, and materialized in, public policies elaborated without teachers' participation, as in BNCC's case.

Accordingly, textbooks become an attempt to control, and a tool to disorient, teachers' work, because they have been used as means of bureaucratic actions to reinforce the pre-established order. That is in the profile of new books that comply with BNCC to be approved by MEC. Topics and skills provided on BNCC are highlighted in the textbook collections to call teachers attention and to shape their work.

Thus, all steps to be taken from planning to evaluations are pre-established by means of charts or teachers' guidelines.

Examples allow identifying how textbooks operate at the level of both individual and collective autonomy and how they relate to one and the other. Taking both spheres into consideration, the loss of autonomy is perceived in the school and institutional context, due to the hierarchies in which teachers are embedded, and due to their lack of participation in public policy decision-making. This process leads to a lack of collective autonomy, even when teachers show some individual autonomy, which is expressed through the activities carried out in their classrooms. This situation ends up turning teachers into technical operators authorized only to implement defined disciplinary matrix guidelines, which may impact on teachers' individual autonomy and reduce it over time.

It is therefore necessary to rethink the role of textbooks as a teaching tool, as well as their form, structure and content. However, they are not the root cause of many problems in the daily routine of schools and teaching practices. They are the materialization of problematic public policies that do not take into account teachers' opinions and training, their intended or current working conditions, nor do they allow for effective teacher participation. Thus, textbooks are an expression of a much bigger problem in their form and use, namely: educational policies that do not encourage teachers to express themselves politically, or even prevent them from doing so. This profile has strong implications in their classrooms, as well as consequences on the lives of their students.

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45.
The Teacher's Guidebook in the Art Textbook
Por toda pArte (*Everywhere*) Approved
in the 2015 PNLD: Content Analysis

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ABSTRACT

The research theme is school guidebooks for teaching the subject of Art. In Brazil, textbooks used in public schools are evaluated, acquired and distributed free of charge by the National Textbook Program (PNLD). For high school it was only in 2015 that the curricular subject of Art was included in the program. As a requirement of the public notices, the textbooks must present a guidebook for teachers, clarifying conceptions, methodological choices, and presenting suggestions for the classes. These textbooks present content from different artistic languages – Visual Arts, Music, Dance and Theater. A single teacher must work on all of them in class, though they are specifically trained in only one of them. The objective is to analyze the propositions of the teacher's guidebook that is part of the Art textbook entitled Por toda pArte (Everywhere), a single volume for the three years of high school, in particular regarding the teaching of Visual Arts. This is a documental research; the methodology used was content analysis, based on didactic categories. The results describe the distribution and organization of information directed to the teacher; and dialogue about the potential of textbooks in teaching the artistic language of Visual Arts.

KEYWORDS: *Visual Arts teaching; Textbooks; Guidebooks for teaching.*

Introduction

The theme of the research is the textbooks for teaching the discipline of Art in Brazil. In the country, textbooks used in public schools are evaluated, acquired and distributed free of charge by the federal government through the National Program of Textbooks and Teach-

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ing Materials (PNLD). This program created in 1985, was gradually extended to all subjects and all school levels.

In 2004, the PNLD began distribution to Secondary Education, but only in 2015 the curricular discipline Art was included at this school level for distribution in the programme. For the books to be approved and included in a list to be chosen by schools, the public notices present general and specific requirements for each school subject. There are pedagogical criteria related to didactic content and procedures, technical and editorial criteria and also criteria related to the construction of citizenship.

These textbooks must present a version for the student and another for the teacher, which includes a teacher's guidebook that clarifies concepts of teaching and methodology, and presents suggestions for the didactic work and for the evaluation processes, among other requirements of the public notice.

The research has focused in a privileged way on the textbooks intended for students, which corresponds to what happens in other countries as well. However, the Research Centre for Didactic Publications of the Federal University of Paraná (NPPD) has been developing research on textbooks for teachers in different fields of disciplinary knowledge.

In this text, we present results from empirical research that focused on the content of a teacher's guidebook to teach Art. In this disciplinary field, there are particular issues that add complexity to the didactic work and also to the production of textbooks, since the curricular component Art must include the teaching of four artistic languages and teacher training is carried out specifically in each one of them.

Thus, the problem analysed relates to the ways of guiding teachers to teach Art, specifically Visual Arts, presented in the PNLD textbooks, considering that the professional tráining for teaching may have been carried out in other languages such as Music, Dance or Theatre.

Theoretical Framework

In general, textbooks are produced by commercial publishers and are bought by families for use in schools. But in the Brazilian

case, research on textbooks must consider a factor that differentiates the local situation and establishes particular conditions for the production and circulation of this teaching resource: they must meet criteria established in public notices to be approved and included in the national program that evaluates, purchases and distributes the books to public schools.

These conditions affect the production of the textbooks in different dimensions, in terms of content and form. Among the particularities for the PNLD Art textbook, publishers must present a single book for the three years of high school with a teaching proposal that addresses the four artistic languages: Visual Arts, Dance, Music and Theatre. Other criteria regarding the content refer to stimulating cultural development, presenting a diversity of artistic activities, showing a technical vocabulary, including a diversity of texts and presenting an interdisciplinary approach. They should also include the themes of Afro-Brazilian and indigenous culture, according to Law 10.639/03 and Law 11.645/08.

Interdisciplinarity is also evidenced as a requirement, as noted in another material directed to the teacher that precedes and supports the book selection process, the "Guide to Textbooks PNLD 2015 – High School: Art", as highlighted below:

> Art has specific knowledge concerning each artistic field: Audiovisual and Visual Arts, Dance, Music and Drama. However, it is necessary to understand that knowledge in Art is under permanent construction, and is not only inherited, but constructed from the heritage and cultural context of a social group. In this way, to know the Art already universally recognized is important, but it is also equally important to build inventive developments from this knowledge, in a contemporary context. Interdisciplinary actions are intrinsic to knowledge in Art. It is noted that contemporaneity reveals the dilution of boundaries between the productions of each artistic field without losing their specific knowledge (Brazil, 2014, p. 8).

In this case, there is a complexity related to the teacher's training, since their graduation is specific in a degree area (Visual Arts, Dance, Music or Drama) and in Basic Education the curricular discipline Art is taught by a single teacher. It is in this context that the research question was formulated: how are teachers oriented for teaching in

these textbooks, in issues related to didactics and methodology of Art teaching, in particular Visual Arts?

In a literature review study, Tourinho and Costa (2008) found a large number of research on the theme of textbooks, but identified that the same did not occur for specific textbooks in the field of Art. Schlichta, Romanelli and Teuber (2018) also pointed out the theme as little studied, in the Brazilian case. Thus, this research is justified by contributing to the academic production on the teaching of Visual Arts and on the books used for this teaching.

Conceptually, the research is inserted in Manualistic, an academic field that includes discursive development studies, genealogical analysis and empirical observations of the book as an object of knowledge (Escolano Benito, 2012). Among the elements to be noted, we highlight the difficulties of conceptualization of this object, as pointed out by different authors.

Thus, it is understood that textbooks can be distinguished according to their functions and their addressees. They can be called textbook (Batista, 2002), pedagogical manual (da Silva, 2018) and teaching manual (Bufrem, Schmidt & Garcia, 2006). The first name refers to the printed book used by teachers and students in the work of one of the school subjects; the second refers to the texts used to train teachers, which produce and circulate the knowledge of the profession; and the third, are also texts intended for teachers and emphasize specific guidelines for teaching the subjects - in other words, books that "teach how to teach".

This last type of book is barely studied, but there are works that focus on the manuals of General Didactics and Specific Didactics (Rodrigues Júnior & Garcia, 2016; Garcia & Nascimento, 2021). In this research, it is considered that the PNLD books for teachers can be conceptually approached to these didactic manuals for presenting guidelines for teaching, mandatorily by force of public edicts.

Methodology

The documentary research aimed to analyze the proposals of the teacher orientation manual, and thus, infer the evident or probable

relationships of the proposals suggested to the teachers in relation to the Visual Arts teaching.

For the research development, content analysis references were used (Bardin, 2002), which encompasses a set of systematic procedures that guided the organization of the empirical work. Thus, the stages of pre-analysis were organised, followed by the exploration of the material, analysis according to pre-defined categories, treatment of the results and their interpretation.

In the year 2015 two books were approved for the subject Art – High School and they remained in use in schools for three years. The books are *Arte em interação* ("Art in interaction", IBEP publishing company) and *Por toda pArte* (FTD publishing company). These textbooks have different proposals for teaching art; the first one can be characterized as a proposal that responds to traditional models, presenting the work divided into artistic languages, while the second one suggests an interdisciplinary project, in which the languages are articulated around themes.

According to a document from the National Fund for the Development of Education (FNDE) on the collections most widely distributed among schools, there is a higher volume of purchases of the teacher's manual for the textbook Art in interaction (59,513 books) compared to the teacher's manual for the book Everywhere (45,125 books). These amounts also correspond to higher sales of the Student's Book for the first title, 4.225,953 copies; there were 3.175,317 copies sold of the second title. This data defined the choice criterion for the work analysed in this text: it was observed that the second manual presents an interdisciplinary proposal, more valued by curriculum standards and in specialized debates and, despite this, it was the one that had the lowest adherence among teachers.

The document selected for analysis is the Teacher's Manual that composes the textbook *Por toda pArte* published by FTD (Fig. 1). It is a part that is attached to a copy of the Student's Book, in which the authors address especially to teachers to present didactic and methodological guidelines.

In the pre-analysis phase, some indicators allowed to define the following didactic categories for the process of analysis of the guidelines: conceptions of Art teaching, suggested methodologies, proposed content, suggested activities and forms of assessment.
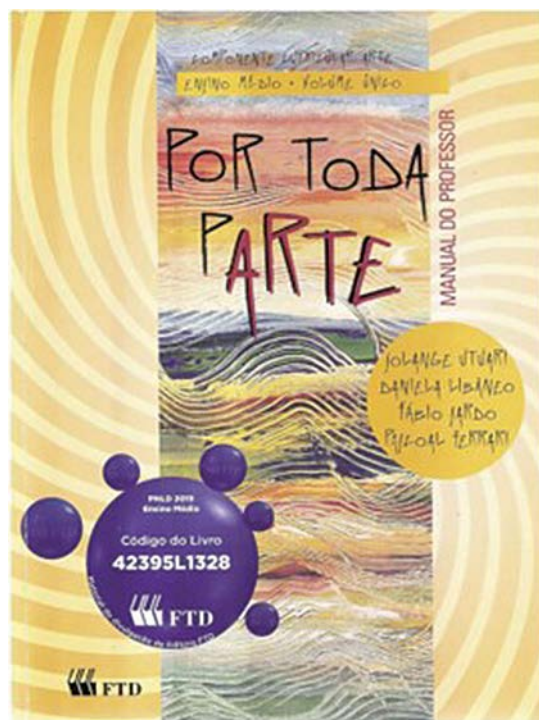
Figure 1. Cover image of the book *Por toda pArte* (teacher's manual).

The teacher's manual was examined page by page, registering the presence of indicative elements that allowed identifying the trends and perspectives assumed by the authors for the teaching of Art. They also allowed discussing the space assigned to the teaching of Visual Arts in the set of guidelines offered to teachers, as described below.

Results and Data Discussion

The analyses were organized from the didactic categories that respond to the organizing elements of the guidelines presented by the selected textbook.

a) In the conceptions of Art teaching, the authors refer to approaches from other countries, for example, Escuelas al Aire Libre (Mexico), Critical Studies (England), Discipline Based Art Education (United States), and they also present a brief history to contextualize the trajectory of the teaching of Art in Brazil. They highlight three working models: 1) Triangular Approach, 2) Visual Culture and the Work Project, and 3) Territories of Art and Culture.

The triangular approach, authored by Ana Mae Barbosa, is considered a milestone for the teaching of Visual Arts in the country, and is still widely used in Brazilian schools. This proposal "consists of a methodology that addresses three axes of learning to build knowledge in Art (…) appreciate, contextualize and make" (Utuari *et al.*, 2013, p. 8), thus, teaching is organized in aesthetic appreciation, historical contextualization of the work of Art and artistic making.

The authors explain the second model – the Visual Culture and the Work Project, by Fernando Hernández – highlighting the perspective of presenting an interdisciplinary proposal, valued in the national curriculum guidelines: "The idea of visual culture is interdisciplinary and seeks references of art, architecture, history, cultural mediation, psychology, anthropology. It is not organized only based on names of pieces, facts and subjects, but from the relationship established with their cultural meanings" (Utuari *et al.*, 2013, p. 8).

The third model, called Territories of Art and Culture, is proposed by Mirian Celeste Martins and Gisa Picosque. Its foundations are in the idea of rhizome, from the philosophical conceptions of Deleuze and Guattari: these territories are "marked by the idea of curriculum-map, in which the teacher traces paths, chooses paths and is the author of his own work" (Utuari *et al.*, 2013, p. 9). According to the authors, the teaching of Art encompasses a complexity of concepts and procedures that can be addressed by the work of a "proposing teacher":

> There is no ready-made formula regarding the teaching of Art, only ways of looking, created propositions and others to be invented. The various trends in contemporary art and education argue that art is complex and, as such, its teaching should explore complexity. However, talking about complex things does not necessarily have to be complicated. The intention is that the teacher can be the inventor and proposer of meaningful encounters with art and culture (Utuari *et al.*, 2013, p. 9).

In relation to the Visual Arts, the authors emphasize the importance of exploring various expressions, including: painting, sculpture, printmaking, assemblage, drawing, performance, photography, film, digital art, among others, through the following elements: colour, line, shape, point, space, two-dimensional, three-dimensional, texture, tone, light, shadow, chromatic value, balance, rhythm, proportion and movement.

After presenting the models, the authors indicate that "the project in Art proposed in this material is concerned with working with the languages in an interdisciplinary way and offering conditions for the teacher to stimulate dialogues and connections between the various languages of art" (Utuari *et al.*, 2013, p. 11).

b) In the indicator about methodological procedures, the authors resume the concept of teacher-proposer, which in this case means

> making space for the voice of the other, choosing paths in which young people can be actively present, being protagonists of their knowledge construction process and expansion of cultural repertoires. A teacher who is a proposer is a researcher, because he/she thirsts for knowledge, and sensitive, because he/she wants beauty. To be a proposer is to think and to allow the other to think. It is not explaining, but knowing how to ask, provoking thought (Utuari *et al.*, 2013, p. 14).

From this, they suggest some teaching and learning situations: the propositional actions, the aesthetic nutrition, the experimental artistic project, the cultural mediation, the cultural expeditions, the rhizomatic thinking, the form and the content, the materialities, the cultural heritage, the interculturality and the transdisciplinarity / interdisciplinarity.

It can be understood that the authors privilege the concept proposed by Mirian Celeste Martins and Gisa Picosque, because, when addressing the teachers, they recommend the construction of thinking in networks (rhizomes) and the proposal to explore artistic territories.

c) Regarding the teaching contents, it is observed that the book consists of six chapters, and its structure "does not prioritize a linear didactic sequence" (Utuari *et al.*, 2013, p. 17). The theme of the chapters is defined by what the authors call "territories". The meaning assigned to the term seems to be a reference to the conception

of teaching presented by Mirian Celeste Martins and Gisa Picosque. According to Utuari (2013, p. 16), the title of the chapters refer to the core content and this content unfolds into territories. Thus, it is not about contents separated by languages. It is observed below the theme of each chapter accompanied by a territory, which resumes some teaching and learning situations:

– Chapter 1: What is Art? (territory: cultural mediation);
– Chapter 2: For languages and languages (territory: artistic languages);
– Chapter 3: Creation (territory: process of creation);
– Chapter 4: Matter of Art (territory: materiality);
– Chapter 5: Art in its form, the form in its content (territory: form and content);
– Chapter 6: Cultural baggage (territory: interculturality).

It is understood that it is up to the teacher or the school to define which chapters will be worked on in each school year, since it is a single volume to be used during the three years of High School.

d) Regarding the activities proposed in the student's textbook, the guidelines in the teacher's manual present some recommendations that start from the paths between teaching and learning. They emphasize the strategy of proposing reflection by the students, identified as a "turning ideas" activity; they highlight the proposal to dialogue with the artistic languages through an experimental project; and suggest establishing relationships with the transversal themes present in the national curriculum guidelines, in activities identified as "connections".

Finally, with regard to assessment processes, the authors suggest that teachers create logbooks and portfolios, which they consider significant instruments for monitoring the student's learning process.

Conclusions

To summarize the results of the analysis, it is highlighted that the manual intended to guide teachers focused on the different elements that constitute the planning and implementation of the didactic process of teaching Arts in school. The privileged theoretical position, in the manual in question, is that the teacher must be a pedagogical

proposer, promoting research and working the content in an interdisciplinary way, both in relation to the artistic languages and to the other subjects of Basic Education.

For the Visual Arts, it was evident a concern in stimulating the questioning through the reading of the image and visuality, going through paths called "territories of Art and Culture". In this sense, it can be concluded that this textbook responds to the current discussions on Art Teaching and to the demands of the PNLD edicts, articulating proposals around the idea of interdisciplinary work among the languages and attributing protagonism to the teacher in the choice of ways to teach.

Despite these positive features in relation to the work proposal, this was not the Art textbook most chosen by schools in the national program. It can be assumed that these characteristics have influenced the choice of teachers who opted in greater number for the other textbook available – also approved by the PNLD, but with the proposal of separate contents by artistic language.

In conclusion, therefore, it is suggested as a hypothesis for further research, that the choice of authors to work with interdisciplinarity may have influenced the choice of teachers, promoting the preference for the book that maintains the traditionally more accepted perspective of separating the languages in education. To confirm this hypothesis it would be necessary a new research with interviews and questionnaires to the teachers about the use of the teacher's manual, about the proposals of each one of the books and about their options in the organization of the classes.

Finally, it is noteworthy that the analyzed textbook remained approved on the list for teachers' choice in 2018, maintaining its characteristics regarding the indicators analyzed in this study and reaffirming its position in the PNLD as a recommended work. Other studies are in progress to verify if there are changes in the data of choice by schools and teachers.

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46.
Manuals for Teaching Physics: A Study of Their Circulation in Pedagogy Courses

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ABSTRACT

This research focuses on didactic manuals produced in Brazil to guide teachers. Since the first decades of the 20th century, copious educational literature has been produced with the aim of contributing to the solution of specific educational problems. Standing out, among these books, are the manuals produced with the twofold intention of guiding teachers and contributing to their initial and continuing education. There are few studies on this topic, whether under General Methodology or Specific Methodologies, which justifies this research. The question asked is: Are these manuals used in teacher training courses? The focus of the research was manuals of Didactics and Methodology for Teaching Natural Sciences and Physics. The aim was to analyze their circulation in teacher training courses in the early years of primary school. At this stage of schooling, Physics is not a specific subject and physics knowledge is included in a subject called Natural Sciences. The empirical field consists of Pedagogy courses in 40 public universities. Methodologically, it is a documentary research and the empirical material analyzed were syllabuses related to Didactics and Teaching Methodologies in the Pedagogy courses. The analysis showed manuals that are referred to or suggested in teacher training courses and pointed out elements related to the conditions of their circulation in Pedagogy Courses.

KEYWORDS: *Teaching manuals for teachers; Physics didactics; Physics knowledge in the early grades.*

Introduction

Since the first decades of the 20th century, a large and significant set of books has circulated in Brazil with the aim of contributing to the solution of specific educational problems; these works are identified by Nagle (2009) as pedagogical literature.

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This set includes textbooks produced to guide teachers in teaching (Bufrem, Schmidt & Garcia, 2006). They have been produced to contribute to the initial and continuing education of teachers, presenting guidelines for the organisation of teaching.

Unlike textbooks with specific disciplinary content, these manuals are methodological materials. There are few studies on this topic in Iberoamerica (Guereña, Sauter & del Pozo Andrés, 2005), that focus on General Methodology or on Specific Methodologies, showing a gap in literature which justifies the present research.

In the first decades of the 21st century, the Brazilian government stimulated the editorial production of textbooks for teachers through a program that it acquired and distributed to public schools. Among the works published in this period are the manuals that guide how to teach school subjects, such as Mathematics, History, Natural Sciences, Art. This type of pedagogical publication is still valued and remains in circulation.

Considering these starting points, the question is: Are these manuals used in teacher training courses? The research was developed in Pedagogy Courses, focusing on the manuals of Didactics and Methodology for the Teaching of Natural Sciences and Physics. The aim was to analyze their circulation in teacher training courses to work in the first years of basic education. At this stage of schooling, Physics is not a specific subject and the knowledge of Physics is included in the subject called Natural Sciences.

The empirical field included Pedagogy courses offered in 40 public universities (federal and state), located in the south and southeast regions of Brazil, geographic clipping defined for being the regions that concentrate the largest number of researchers involved in the study of manuals and the largest number of authors of manuals circulating in schools.

Methodologically, this is a documentary research and the empirical material analyzed consisted of syllabuses and class syllabuses related to Didactics and Teaching Methodologies taught in the Pedagogy courses, in order to identify the manuals included as references for the students. In a complementary way, online survey instruments were sent to teachers of the analyzed courses.

The information was organized in tables and graphs, and the analysis showed manuals that are referred to or recommended in teacher training courses, including other elements related to the con-

ditions of their circulation (Darnton, 2010). In addition, analyses of the didactic and epistemological content of the manuals were also carried out to identify theoretical references and methodological procedures suggested by the authors to teach the students Physics in the early years of basic education.

Theoretical Framework

The teacher guidance manuals are publications that played a key role in the constitution of the Brazilian school, especially in the 20th century. Through them, pedagogical ideas and teaching models circulated that also shaped the teaching profession in the country - elements that are examined in studies such as da Silva's (2005) on textbooks in Brazil and Portugal. These manuals put into circulation scientific and pedagogical knowledge related to teaching and learning, but also behaviours and values that marked the teacher education and, broadly, the school cultures in Brazil.

It is relevant and necessary to assume the textbooks for teachers as a research object, either by the potentiality of the studies to clarify elements related to teacher education, or by what can be understood from the value assigned to the contents, or even by the presence of conceptions of teaching and learning that appear in the suggestions to organize the didactic work. In this particular case, the focus is on the teaching of Natural Sciences, with special attention to Physics.

In previous research, it was possible to verify that there is a significant number of works aimed at teachers who do not have specific training in Science or Physics, who work in the initial years of Primary Education. It was possible to observe changes and reiterations in these textbooks over time, what originated the main question of this research in the direction of verifying the circulation of Science and Physics textbooks in teachers' training courses focusing on the initial years of primary education.

The concept of circulation was supported in Robert Darnton's contributions to the study of relations between printed culture and social, economic, political and intellectual conditions that affect the production and diffusion of books; these processes were represented in a conceptual scheme that the author called "communication cir-

cuit" (1982). The circuit was intended to examine the publication and trade of books in a period of technological stability that lasted during the years 1500 to 1800. For the author, the circuit brought a possibility within the field of historiographical studies to analyze how books emerge, how they reach their readers, and what these readers make from them.

Towards the same concept, when analyzing relations between Literature and History, Chartier, mentions the circulation of the works as a major core of contemporary discussion: "(…) the question of the circulation of the works and the conditioning of their production and consumption, both the material conditioning - the material processes of production, the material means of invention of the form and the circulation of the forms - as well as their institutional conditioning" (Chartier, 1999, p. 210).

By highlighting the relevance of the concept of circulation, Chartier and Darnton demarcate a process that involves several factors, from the production of the book to its consumption. The circuit of communication can guide the eye of the researcher to the agents and processes that are organized in other historical contexts, with their specificities. Then, it is pointed out the possibility of appropriation of elements of this scheme, in particular the relations between agents – authors, readers, libraries – marked by intellectual influences, to analyze the textbooks destined to didactic orientation, to teach school knowledge.

On the other hand, beside the material conditions of books production and consumption, Chartier highlights the institutional conditions; for the discussion of the textbooks analysed, the institutional conditions of consumption are especially relevant, since we seek to investigate if these books circulate in Pedagogy courses. The subject is the circulation of textbooks on Didactics and Methodology of Sciences and Physics in teacher education courses and, thus, it is relevant to examine institutional conditions of the process, that, in the present case, refer especially to the rules and the official documents relating to these courses.

As a remarkable element in school cultures, textbooks are artifacts that receive various denominations. They constitute a diverse set and fulfil different functions, but there is a consensus that they are a permanency throughout the centuries in which schooling has been consolidated as a social process. They are linked in their origin

to the emergence of mass schooling and the compulsory schooling of all children, with the responsibility of the State, through the education systems. In this context, the teaching work began to require specialized training and the manuals were consolidated as instruments to be used for this purpose.

In Brazil, we point out the existence of manuals aimed at teacher training produced since the 20th century, through which concepts and ways of teaching, skills and competencies required from teachers, among other contents, have been disseminated. However, they cannot be treated as a homogeneous group, because they have different characteristics and have undergone major transformations over time.

In the limits of this text, it is presented as part of the results of a research about textbooks to guide teachers in the teaching of Sciences and Physics. Two results are highlighted: a) the identification and analysis of books recommended or referred in the programs of disciplines of Pedagogy courses; b) the analysis of the academic background of the authors of textbooks found in the programs, building a network of references that are materialized in the textbooks.

Methodology

The empirical study looked for elements to analyse the circulation of textbooks to teach physical knowledge in Pedagogy Courses, where teachers are trained to work in the initial years of Basic Education and also to train Pedagogues to work in the school organization.

The first stage had the purpose to identify Brazilian public universities offering the course in the in-class modality and, from the results, to define the geographic clipping for the following stages. The South and Southeast regions were selected based on bibliographic review in annals of events in the field to identify researchers on the theme of textbooks; authors of textbooks for teachers were also identified. The two regions concentrate the biggest number of researchers and authors with interest in the subject.

The survey was launched on the web pages of 42 selected universities. Initially the subjects of each course that focus on the teaching of Natural Sciences were located, being selected for analysis those that aim to provide educational tools for the teaching activity; they

are linked to the field of didactics, methodology and teaching practice. Sixty-six programs were located and their analysis resulted in the identification of 57 books that could be associated with the orientation of teaching in Sciences and/or Physics, a purpose explicitly present in their title, or indirectly by reference to elements related to teaching.

From this set, 14 books that were available in the NPPD/UFPR collection were selected for full analysis. They were categorized according to their purpose, didactic and methodological structure, as will be described in the results. Moreover, in order to clarify elements of the production and circulation of the books that were categorized as textbooks, the authors' curricula were consulted as to their academic background, with a view to analyzing theoretical and social influences related to the production of the textbooks.

In a complementary way, in order to add elements about books' circulation in Pedagogy courses, online instruments were used to search information with the help of the teachers and it was also accomplished online search to verify the presence of the textbooks in the libraries of the analyzed courses. A brief summary of the results is presented below.

Results and Discussions

The documental analysis privileged the 66 programs of the disciplines taught in the courses of Pedagogy of the Brazilian South and Southeast Regions and the books referred in these programs to which access was possible in the conditions of social isolation due to the pandemic. From the results, complementary empirical studies on the authors and on the library collections were developed.

a) On the Books Referred to in the Programs

The analysis identified and selected books that could be related with the purpose of contributing to train teachers in their didactic actions. Their titles were observed, but the presence of any element indicating that the book could bring guidelines for the teaching of

Natural Sciences or Physics was also considered. About the 57 works located in the cited references or suggested in the programs of the disciplines, some results are synthetically highlighted:

a1. In the time span covered by the references, only one publication from the 1970s and one 2018 publication were found, limits of the timeline. The table shows the number of books published by decade.

Decades	1970-1979	1980-1989	1990-1999	2000-2009	2010-2019	2020	total
Quantity of books quoted	1	8	17	17	14	–	57

Table 1. Quantity of books published by decade (1970-2020)
Source: The authors.

a2. The concentration of books published between 1990 and 2009 can be explained by the curriculum reforms that occurred in the 1990s. These reforms were accompanied by curriculum documents based on constructivist perspectives, followed by social-interactionist approaches, whose influences extended to the following decade. The period was marked by the Ministry of Education's stimulus to the production of manuals to guide teachers through public notices for purchase by the Federal Government for distribution to schools.

a3. Although not examined in their entirety, but based on information available about them, it can be stated that many of the 57 books can be classified as essays on education, general foundations books or even technical books on topics related to Science and teacher formation.

b) On the 14 Books Analysed in Full

b1. They were published between 1982 and 2013 and the largest quantity is concentrated between 1990 and 2009 (11 books).

b2. Thirteen books were published from the 1990s onwards. They do not form a homogeneous set and were classified into 4 distinct groups according to their purpose and didactic structure for teacher guidance:

– Group 1 - Didactic manuals in the strict sense: these are books designed to guide teachers in Science Teaching, including in these guidelines, in different ways, physical knowledge. These manuals present foundations and methods for teaching Science, themes/subjects/contents, as well as, procedures and strategies for teaching; they also propose activities that can be carried out with students and assessment. The didactic elements are presented in an articulated structure, thus constituting a didactic and methodological proposal that takes into account its various dimensions. Seven (7) books were included in this category.

– Group 2 - Didactic manuals that focus on the orientation of teaching procedures. Although they are aimed at teacher training, these books present didactic fundamentals in a reduced, short form, with the purpose of introducing the main content – the procedures and activities for the students. Two (2) books belong to this group.

– Group 3 - Books that bring together academic contributions on Science Didactics. These books have a different structure from the didactic manuals, as their purpose is to offer results of research or systematization on specific teaching experiences, addressing different themes. There are three (3) books organized in chapters produced by different authors, teachers and researchers dedicated to the study of Science teaching.

– Group 4 - Manuals for performing activities. In the set analysed, only one book presented this characteristic. Its purpose is to suggest experimental activities that can be developed by children in the classroom, or also at home, but not necessarily with school intentions. It suggests that children are stimulated to observe, to experiment, question and register everything that occurs around them.

In synthesis, the research confirmed that the books suggested in the programs and which were fully examined constitute a heterogeneous set, with different characteristics and different purposes

and focuses. The analysis of these manuals and books present in the NPPD showed that the authors organized their works in order to contribute with the teachers in the organization of Science teaching, either through the fundamentals and teaching methods, or through the evaluation and the curriculum, the proposals and suggestions of activities and the history of Science teaching.

Although only seven books have been categorized as didactic manuals in the strict sense, each one of them has its own particularity, its own structure, and all of them somehow come close to the same purpose: to guide the teaching of knowledge in the disciplinary field of Sciences, including physical knowledge, and thus contribute to the initial and continuing training of teachers. However, four (4) of them are especially intended for teachers of early years, although the others bring contributions that can be extended to this phase of schooling.

c) On the Circulation of the Books

The research confirmed the permanence of these books in school cultures, considering that their presence in the programs of Pedagogy courses is an institutional conditioning of the circulation process. Their authors are agents who act in the production and circulation of these works. Thus the analysis of the books indicated the need to understand them from some elements of their production, especially in the sense of amplifying the understanding of the institutional conditioning and of the academic intellectual influences that can act in the circulation of the Science Textbooks.

For this, it was sought to understand the relationship of the authors with other agents from the point of view of their academic background, in particular with their academic advisors, thus forming a "society of references". The search was carried out from the Lattes Platform, official instrument for the dissemination of academic curricula, control and evaluation of the production of students and teachers linked to Post-Graduation in the country. The results generated a graph that highlights some relations.
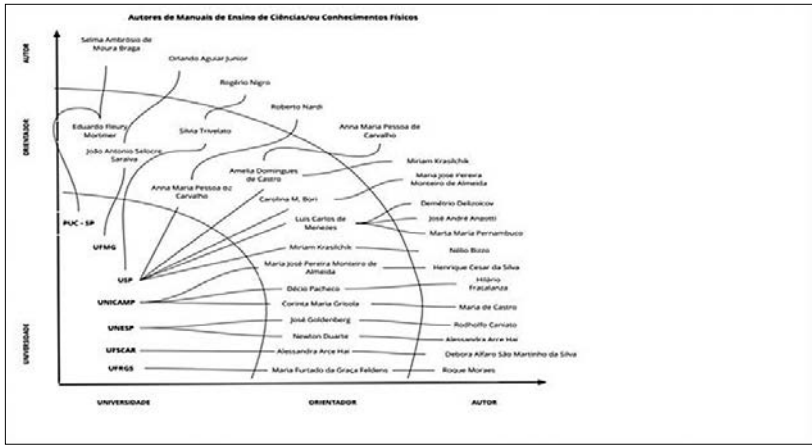
Figure 1. Authors and the intellectual network of influences on academic education. *Source*: Nascimento (2022).

The data evidenced that most of the textbook authors had their postgraduate education at the University of São Paulo (USP), a major research centre in different areas of knowledge and also in the fields of Education and Teaching of Science and Physics. Academic productions on the history of Science Teaching and Physics Teaching show different faces of the performance of the research professors of the institution in the formation of professionals who work in the field, including as authors.

The analysis of the network of intellectual references that shows USP as a meeting point of the trajectory of these authors allowed us to evidence the existence of a field of dialogue between General and Specific Didactics produced from the Faculty of Education of that University. Part of these authors are also authors/organizers of other identified books that, despite not having the characteristics of didactic manuals in the strict sense, bring contributions to the formation of teachers who teach Sciences and physical knowledge in the early years, relating experiences and research reports with didactic situations.

Conclusions

The research verified that manuals focusing on the teaching of Sciences and physical knowledge circulate institutionally in Pedagogy courses through their programs. In a complementary way, it was also verified the presence of these manuals in the collection of the university libraries of the South and Southeast regions. Among the institutional agents, the libraries fulfill the function of disseminators when they make such works available, often by indication of professors of the institution.

As agents who act in the communication circuit, the professors are diffusers of the books in the Pedagogy courses and, based on them, they disseminate a didactic and methodological knowledge for the teaching of such knowledge. Instruments applied in a complementary and exploratory way pointed out in an indicative way that the manuals also circulate in the classes.

Studies about the manuals that are addressed to teachers can contribute to clarify constitutive elements of the processes of teacher education and also broaden the debate about the relationship between these manuals and the practices of teaching of school subjects, especially in this case, the teaching of Natural Sciences and Physics.

The results show that the textbooks have gained institutional space not only in the programs of the courses, but also in the libraries of the Universities, suggesting a process of re-signification of these didactic publications.

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47.
Training of Physics Teachers to Use Digital Information and Communication Technologies

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ABSTRACT

Digital technologies are increasingly present in our daily lives, influencing and modifying several aspects of our lives, from the way we communicate to our consumption habits. The school has not been unaffected. Considering this context, this study sought to understand, based on the speeches of Physics teachers who work in state public schools in the city of São José dos Pinhais in Brazil, how their training contributes to the use of Digital Information and Communication Technologies (DICT) in their pedagogical practices. Thus, for the production of data, we opted to use a semi-structured interview, which was transcribed, and the results were grouped into 5 items: characterization of the participants; technologies used by teachers in their teaching practice; initial training; continuing education; and informal education. The results indicate that teachers feel the need for diversified and plural continuing education courses. It also shows that they have sought informal education through the exchange of knowledge with their peers and on social networks. Finally, it shows that teachers who graduated more recently had more access to subjects focused on DICT, but this does not necessarily mean their use in the classroom. These factors can contribute to thinking about training practices that not only meet teachers' expectations but also the needs imposed by current digital technologies.

KEYWORDS: *DICT; Physics teaching; Physics teacher education.*

Introduction

Digital technologies are increasingly present in our daily lives, whether to perform simple tasks, such as turning on the lights through voice command, or to perform more complex tasks, for example, banking transactions from devices that fit in the palm of the hand and operate with the simple touch of a finger. We live in a time of expansion and appropriation of Cyberculture (Lévy, 1999) – char-

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acterized by factors that democratize the access and dissemination of information.

From the end of the 20th century on, numerous technologies have entered the school space and challenged the school to reconsider its models – not only pedagogical ones but also those related to management. For Kenski (2012), learning at school is directly related to the technologies used. According to the author:

> (…) technologies – whether new (such as the computer and the Internet) or old (such as chalk and blackboard) – modify the principles, the organization and educational practices, and impose deep changes in the organization of the content to be taught, how information sources will be worked on and accessed, and the individual and collective ways in which learning will occur (Kenski, 2012, p. 76).

Teachers have been experiencing new ways of conceiving, producing, and using DICT to plan, develop, and evaluate their practice. Thus, it is fundamental to understand this experience and the new relationships it creates. Teachers have to be integrated and interconnected in action and training networks, enhancing the teaching and learning process to expand and permanently train other individuals (Camas *et al.*, 2013).

The insertion of DICT in school environments is indicated in official documents that guide teacher training, such as the National Curriculum Guidelines for the Initial Training of Basic Education Teachers (Brasil, 2019) and the National Curriculum Guidelines for Continuing Education (Brasil, 2020). Both documents emphasize that initial and continuing education courses must provide conditions for future teachers to "understand, use, and create digital information and communication technologies in a critical, meaningful, reflective, and ethical way in the various teaching practices" (Brasil, 2019, p. 13).

Understanding the factors related to teacher training that can motivate or discourage the incorporation of DICT in their practices becomes important to thinking about course models and strategies to meet the official documents' propositions. Thus, this work aims to identify, from the speech of Physics teachers, the experiences related to their training that contributed to the incorporation of DICT in their practices.

Methodology

Thirteen Physics teachers who work in state public schools in the city of São José dos Pinhais, Paraná, Brazil participated in the research. After approval by the Ethics Committee of the Federal Technological University of Paraná (UTFPR), an invitation to participate was sent by email to all Physics teachers who worked in the city.

The interviews were audio-recorded and carried out on the premises of the school where the participants had a greater weekly workload, which helped to better understand the reality of work and the physical and material conditions of the schools where the interviewees worked.

The interview was composed of four blocks, the first two being common to all participants and the last two specific and dependent on the answers to questions in block 2. Figure 1 presents an outline of the interview script.
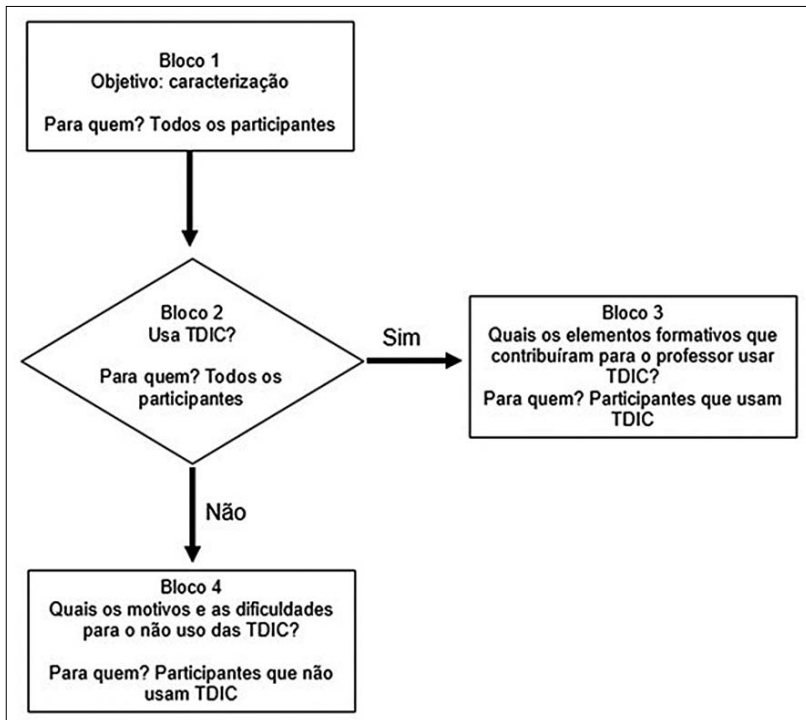

Figure 1. Flow of the interview script.
Source: The authors.

The first block was to characterize the research participants and obtain information about their academic and professional backgrounds. The second block sought to find out if and how often the participants used DICT in their teaching practice. The third block was only for participants who declared, in the second block, to use DICT as a teaching resource in their teaching practice, regardless of frequency. Finally, the fourth block was answered by teachers who declared no use of DICT in their teaching practices. The objective of this last block was to understand the reasons and difficulties that restrained them from using DICT in their classes.

The interviews were transcribed and the results were grouped into the following analysis items: 1) characterization of the participants; 2) technologies used by teachers in their teaching practice; 3) initial training; 4) continuing education, and 5) informal education.

Results and discussions

Of the teachers interviewed, 8 are between 31 and 50 years old and 5 are between 21 and 30 years old; 5 declared to be female and 8 male; 8 have 11 years or more of experience as a teacher and 5 have less than 10 years.

Some participants' ages and years of experience relate to a time when little was said about DICT in initial training. This can be inferred based on the participants' speeches when they were asked about having been trained to develop activities with DICT in their undergraduate courses.

> T10: No. Since I took the course. I graduated in 1982. Even during the specialization in the 90s, technology was not talked about.
> T8: No. In that period social media did not exist and the technologies that existed at the time were very primitive, perhaps it was the beginning of the internet.

All teachers have degrees in Physics, 10 have specialization in Education and one has a Master's degree in Teaching. Of the 13 teachers, 12 said they had participated in courses on the use of DICT in the teaching-learning process.

Technologies used by teachers

We also investigated how often participants used certain teaching resources in their teaching practices. Thus, at the time of the interview, a table with the main resources was presented to the participants and they had to choose whether they used a certain resource "very much", "much", "a little" or "not at all". Table 1 summarizes the results.

Didactic resources	Very much	Much	A little	Not at all
Blackboard and chalk	7	4	2	0
Computer	6	3	4	0
Cell phone	4	0	8	1
Textbook	2	4	6	1
Other books	0	0	0	13
Videos from the internet	5	4	4	0
Simulators	4	4	5	0
Animations	2	4	7	0
Low-cost experiments	4	3	6	0
Lab material	1	6	6	0
Projector	0	0	0	13
TV	0	0	0	13
Other. Which?	0	0	0	0

Table 1. Frequency of use of teaching resources by participating teachers.
Source: The authors.

Blackboard and chalk are still the technologies most used by participants, followed by computers, internet videos, and simulators, respectively. Even though DICT is present in teachers' and students' daily lives, the former technologies, such as the blackboard and chalk, are still widely used. According to teacher T10:

> T10: Just as it is palpable to show him (the student) a simulator to see how the thing happens, it is also palpable for him to write down in his notebook something that the teacher wrote on the board.

Believing that DICT can contribute to the teaching-learning process does not mean stopping using non-digital technologies. On the contrary, we believe that the multiplicity of resources can make the teaching-learning process more versatile, attractive, and beneficial.

The computer is also commonly used by teachers, whether to prepare classes or to work with videos, simulators, animations, etc. in their classes. Regarding cell phone use, only 4 teachers said they use it very much in their teaching practice, 8 said they use it a little, and 1 reported no use of it. This result indicates some resistance to the use of a resource that is part of most students' lives.

Initial Training

During the interview, participants were encouraged to talk about the training they had in their undergraduate courses concerning the use of DICT. The answers show that many teachers graduated at a time when little was said about these technologies in undergraduate courses. Six teachers responded that they did not have subjects addressing this topic. In fact, technology advanced a lot in recent years, thus, we did not expect teachers who graduated in the last century to have had discussions on how to work with the latest technologies.

> T5: One or another teacher said something but it was very precocious, even laboratory simulators at the time were more restricted, difficult to use. Except for demonstration classes in PowerPoint, even running videos was difficult. I was not encouraged to do so.

T5's answer shows that many teachers graduated at a time when DICT was not yet part of the school reality or was still very incipient. It points to the need for planning and offering continuing education courses so that these teachers can update.

On the other hand, seven teachers said they had undergraduate disciplines in which DICT was used in the teaching-learning process. Six reported that during classes there were only demonstrations or guidance on the operation of technological resources or presentations using PowerPoint, simulators, videos, and animations.

T6: There was. It was about the use of multimedia resources, such as playing videos to students, or in terms of simulation as well. They showed but didn't explain much what it was like. You can use this, or this other site, but no examples.

From T6's speech, it can be seen that during the undergraduate course, the guidelines for the use of DICT were more theoretical than practical. On the other hand, T1 reported that he was the one who proposed the use of DICT in presentations in undergraduate classes.

T1: I always tried to insert it, for example, there were Physics Teaching Methodology classes, so when I had to teach a class on a certain topic, I used something, some technology, a video, a simulator. On my own initiative, I used it.

T1 shows that the uses of DICT in initial training courses often happen through individual initiatives, without specific guidance. Teacher T12, on the other hand, reports that the use of DICT during the undergraduate course was quite intense, with incentives in several disciplines.

T12: Yes. There were 2 subjects, the first one was focused on the use of simulators, and how one could use them in the classroom, for example, Tracker, we tried to develop ways to use it in a classroom related to the content. And the second was more for programming, we used Geogebra and other programs to program simulations. I remember I did a simulation of the prism, decomposing the colors. We also had it in teaching subjects and we always tried to bring these technological elements as well, in addition to experiments.

In general, the teachers point out the need for discussions in undergraduate Physics courses about how DICT can contribute to improving the teaching-learning process. This perception is shared by Kenski when she alerts us to the inevitability of this topic even in initial training:

It is also evident that, due to the complexity of the technological environment, activities of training and approximation between teachers and technologies should be carried out as soon as possible. The beginning of this process, preferably, should occur in teaching degrees and pedagogy courses (Kenski, 2012, p. 80).

It is possible to notice that the teachers who graduated more recently, in the last 5 years, had more contact with DICT during the course. However, this does not represent greater use of DICT in their teaching practice, since these professionals point out the lack of equipment as a demotivating factor.

Continuing Education

During the interview, the teachers were also encouraged to talk about the moments of continuing education for the use of DICT. According to them, the education system maintainer offers training courses, but there is little adherence since they are not during their working hours and the content does not meet the teachers' expectations. Teacher T3 talks about the resources that are available to teachers, but that are little used due to lack of training:

> T3: All our rooms have a computer and almost all of them have a projector and those that don't have a projector have a TV. But some teachers don't know, (the use of DICT) has to be discussed more with these teachers so that they can do this training and use these tools.

Teacher T9, on the other hand, talks about the need to address methodologies that enhance the use of DICT in classes:

> T9: Teaching methodologies for giving classes, taking a Physics subject and seeing how technology can help when explaining the content.

Teachers T3 and T9 emphasize the importance of offering continuing education courses so that teachers can get to know the technologies they have at their disposal and which are the possible methodologies to enhance their use in the teaching-learning process. It is in moments of continuing education that teachers have the opportunity to reflect on their practice, exchange ideas, and improve their teaching strategies.

The teachers also highlighted the need for more significant investments by the maintainer in the offer of continuing education courses for the use of DICT as well as better conditions of access to the training, for example, the teacher being able to attend within their

working hours, which, according to Kenski (2012), does not happen in most education systems.

Informal Education

Regardless of whether or not they had moments of initial or continuing training for the use of DICT, teachers also report seeking knowledge autonomously with colleagues, in social networks, and with family members.

> T4: I participate in Facebook groups of Physics teachers from all over Brazil and abroad. That's where we exchange materials, for example, last year we developed some works on how to approach content in times of Covid-19.
> T11: I think that everything I learned about the use of simulators, which I ended up not using due to lack of resources, I learned on the Internet or with other colleagues.

It is possible to notice that teachers are aware of the importance of working with digital technologies, and have sought solutions to solve the difficulties found, not only the technical ones related to the use of devices and applications but also the pedagogical ones regarding the articulation of content with the DICT, which can be solved through initial and continuing training.

Final Considerations

This study investigated the opportunities that Physics teachers, who work in state public schools in the city of São José dos Pinhais, Paraná, Brazil, had throughout their initial and continuing education and professional practice, to build knowledge about the insertion of DICT in their teaching practices.

Due to the intense technological development in recent years, only teachers who graduated in the last five years had discussions on how DICT can contribute to the improvement of the teaching-learning process.

Regarding continuing education courses, we noticed the dissatisfaction of teachers concerning the few opportunities provided by the maintainers of the education system. Teachers demand moments of continuing, pedagogical, and instrumental training that discuss the inclusion of DICT in their practices to contribute to the improvement of the teaching-learning process.

This research also showed that it is necessary to consider, in the planning of continuing education, the knowledge built by teachers along their journey, either through the exchange of information with colleagues or on social networks.

Finally, we understand that for the inclusion of DICT in the schools' routine, and in teachers' pedagogical practices, it is necessary to invest more in infrastructure, in the acquisition of equipment such as computers and software, in the availability of the Internet and its access. In addition to that, it is necessary to provide more opportunities for teacher training, starting with undergraduate courses and continuing in a formal and persevering way throughout their professional life.

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10.
INCLUSION

48.
Representation of Disability in Italian Primary School Textbooks

MARIA FILOMIA[*]

ABSTRACT

Representation of disability in school textbooks may influence pupils' knowledge and perceptions of people with disabilities, since textbooks provide a context for understanding the relationship between knowledge and values. This research aims to show how children with disabilities are represented in textbooks in use in Primary Education in Italy. The study design is empirical and focuses on comparing the analyzed textbooks. The corpus of the analysis is based on 49 primary school textbooks. Results show that children with disabilities are mostly excluded from the analyzed textbook.

KEYWORDS: *Textbook; Primary school; Disability; Inclusion.*

Introduction

The school textbook is one of the first tools that allow children to know, explore, and encounter social reality. A textbook is a tool that presents didactic and educational content, as it offers specific cultural and social models absorbed daily by teachers and pupils (Filosofi & Venuti, 2019). In addition, the images and texts contained therein offer cultural and social representations of reality. The stories in which the main characters are children with disabilities or special educational needs allow us to know some situations outside the frameworks imposed by diagnoses. Furthermore, the portrayal of individuals with disabilities opens up new insights, possibilities of encounter, empathy, and representation outside of prejudices (Filomia, 2020). Jensen *et al.* (2021) suggest that

> textbook authors have an important social responsibility with respect
> to decisions made about what should be included in textbooks and how

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human diversity should be represented. It is troubling that so many textbook authors explained that the reason for their exclusion of the world's largest minority group from textbooks was unconscious omission (p. 14).

This study aims to explore how disabled children are presented in education and particularly in the illustration of textbooks used in Italian elementary schools.

Theoretical Framework

Italy has an established history of inclusion and it has long been considered one of the leading nations with respect to including children with disabilities in mainstream schools. Italy has introduced several layers of legislation to support the inclusion of all children with disability.

National Law 517 was introduced to outline further the right of "disabled" children to be included in ordinary schools, and no exceptions were made concerning the severity of the child's disability. In addition, special education teachers had become an integral part of the teaching staff at the different school levels, and all architectonic barriers were removed. In Italy, it is guaranteed that all children with special needs would be included at school at every level.

The educational program was meant to be highly individualized, with the possibility of a variety of alternative activities in order not only to meet the special needs of the pupils but also to fulfil their potential and foster their natural aptitudes.

The local health authorities, upon request of the parents, must produce an accurate evaluation of the difficulties encountered by the pupil in different fields as well as of his or her potentialities. Based on this evaluation, an Individualized Educational Program (Piano Educativo Individualizzato – PEI) is developed jointly by the teachers, the parents and the clinicians.

According to Ostrosky *et al.* (2015):

While positive peer interaction is associated with the social acceptance of children with disabilities, children with special needs are at risk of being socially rejected and marginalized in early childhood inclusive

settings without a curriculum to support greater acceptance of these children. Considering these facts, the use of classroom materials and resources to counteract the risks of marginalization and rejection is critical (p. 31).

The school textbook is one of the first tools that allow children to know, explore, and encounter social reality (Biemmi, 2017; Filosofi & Venuti 2019). A textbook is a tool that presents didactic and educational content, as it offers specific cultural and social models absorbed daily by teachers and pupils (Filosofi & Venuti, 2019). Textbooks provide a context for understanding the relationship between knowledge and values (Hodkinson *et al.*, 2018; Valente *et al.*, 2014). In addition, the images and texts contained therein offer cultural and social representations of reality (Filomia, 2020; Jensen *et al.*, 2021).

Indeed the textbook, as a fundamental support for the teaching-learning process, more or less intentionally, leaves out necessary information and perspectives and can distort reality by omission, deletion, addition or deformation of the information given.

Literature tells us that including children with disabilities in textbooks representations is necessary:

> Through book-reading and discussions, teachers can promote disability awareness in a manner that will lead to greater understanding about individuals with disabilities, and provide vocabulary that is current, appropriate, and relevant to all children in the class. This could include providing books depicting pictures and stories of children with disabilities, introducing children to sign language, or using visual supports to increase the understanding and participation of all children. However, choosing appropriate books about disabilities and using the books effectively to facilitate understanding of children with special needs can be difficult (Ostrosky *et al.*, 2015, p. 32).

Text and image are two communication systems operating in parallel and transmitting messages. Textbook's functions are carried out not only through the texts it contains but also through its visual and pictorial material, "images enhance aesthetic pleasure and strengthen, unravel, and reinforce the meaning of the text" (Karintzaidis *et al.*, 2016, p. 114).

The analysis of the image is itself significant. Recent studies (Kress & van Leeuwen, 1996) have shown that written or spoken

language is not the only available way of constructing meaning. But the most important aspect is that the image functions ideologically, communicatively and aesthetically on many levels. Moreover, all the texts and images contained in textbooks imperceptibly transmit to the student a code of values, behaviour and a certain sense of right and wrong.

A realistic and non-prejudicial image of people with disabilities should be an important part of the curricula of public education institutions. It can help students understand the needs and reality of these people. Textbooks can be considered as "tools" that help students to become familiar with the diversity of society, and its social and cultural contexts (Disability awareness in education can also help to establish an inclusive approach of the whole society. However, it is important to reveal the appearance of this topic in textbooks, as teachers often teach the different topics of their subjects based on the content of the books.

Hodkinson (2012) asserts that exposure to representations of disability through textbooks can lead to erroneous and negative conceptualizations. On the other hand, positive representations of disability can help young readers to connect with the main character and be an effective means to overcome mistrust through metaphors and representations (Filomia, 2020). However, international research shows that these representations are limited in textbooks (Jensen *et al.*, 2021).

Methodology

The objective of this research is to show how children with disabilities are represented in textbooks in use in one primary school in Umbria, Italy.

This study uses a mixed-method approach. The quantitative analysis investigates the presence and the extent of the visual representation of disability in textbooks. In comparison, the qualitative analysis examines the identified representations. In addition, it examines which aspects of diversity are given more attention (Filomia, 2020). In particular this paper discusses whether the illustration of the specific textbook examined reflect children with disabilities.

My research questions are:
– Do Italian textbooks reflect the diversity inherent within our society?
– What is the predominant model of disability detailed within the textbook commonly presented to primary school children?

Forty-nine textbooks (**Table 4**) from 2015 to 2022 and currently used were examined. In phase one of the research, the macro analysis, each textbook was examined section by section and read page by page, paying attention to images which referenced disability or disabled children being demarcated. During this phase, a frequency analysis was also conducted, to calculate how frequently disability, disabled children or impairments were represented. This involved a simple tallying of the children, categorized by gender, disability, and impairment. In phase two, the microanalysis, the demarcated images were examined using picture analysis. The sample consisted of all the illustrations found in elementary school textbooks, a total of 6806 pages being analyzed.

Textbooks	%	Pages containing child with disabilities figure
Sorridoimparo 3 – Letture	0.59%	1/169
Che facile! Letture (1-2-3)	1,66%	2/120
Che facile! Matematica (1-2-3)	15,27%	11/72
Billy Bot Stories for Super Citizens 3	1.38%	2/144
Giocamici 1. Matematica	0.52%	1/192
Giocamici 1. Storia e Geografia	1,38%	1/72
Mia e Leo nel paese delle meraviglie 3. Grammatica, Scrittura, Arte e immagine	0,81%	1/122
Total	0,27%	19/6806

Table 1. Textbooks.

Results and Data Discussion

The analysis showed that only 10 books out of 49 contained (no. 19 pages in total) images of a child with disabilities.

In total, then, in the Italian sample, only 0.27% of the sample portrayed images of children with disability (**Table 2**).

Totals	Results for disability	%
6806	19	0,27

Table 2. Analysis of pages.

The analysis of the images in the textbooks revealed the limited portrayal of children with disabilities in sets of textbooks. Out of the 7602 children's images illustrated, only 10 different images of disabled children were found (**Table 3**).

Totals	Results for disability	%
7602	20	0,26

Table 3. Analysis of the illustrations.

Furthermore, 1 image, repeated 10 times, was contained in just one of the books *Che facile! Matematica*, published in 2020. In total, then, in the Italian sample, only 0.26% of the sample portrayed images of children with disabilities.

An interesting recurring image is positioned on top of the practical section. It is truly inclusive. Both the section where it is and recognizing the powerful value which has always been attributed to images made the image truly inclusive.

Therefore, the representation of disability in data sets was then extremely limited.

Conclusions

The analysis of the images contained in the textbooks examined revealed the limited portrayal of people with disabilities. The rep-

resentation of disability data sets was then extremely limited, making children with disabilities one of the most underrepresented and inadequately portrayed groups in textbooks.

Although this study suggests that it is necessary to promote research around this issue, to improve the quality of childhood representation in textbooks; once again, we stress the need to use educational resources at school that include children with disabilities (Hodkinson, 2007; Jensen *et al.*, 2021; Moya-Mata *et al.*, 2017).

If we are to move forward with the important educational policy of inclusion within primary, then, we suggest textbooks to be sensitively constructed, according to Hodkinson:

> Inclusion becomes a form of cultural democracy and as such, we suggest, becomes a moral concept which necessitates the expression of the values of self-fulfilment, self-determination and equality (…). We suggest, here, that it is in the pursuance of this democratic imperative where the mediating role of the textbook for young children's development of an understanding of disability becomes most important (Hodkinson *et al.*, 2018, p. 7).

The education system should seek to support a culturally responsive pedagogy that would observe disabled people being more prominently and more positively located within the materials that support the teaching and learning of pupils within our schools.

The present study aims to emphasize the importance of reflecting on the selection of images in textbooks from an ethical perspective to educate about the value of inclusion. The educational system should strive to support a culturally sensitive pedagogy that acknowledges the need for people with disabilities to be more prominently and positively represented within the materials that support teaching and learning in our schools.

This study has limitations, as the number of analyzed books is small, and the results do not allow for generalization. Additionally, the analysis did not include gender, and it would have been appropriate to conduct an analysis that also encompasses textual content. The results also call for further investigation and research by expanding the sample of analyzed textbooks and exploring the perceptions of teachers and students, as well as the motivations behind the absence of inclusive representation. It will be necessary to investigate whether the omission is intentional or unintentional.

When disability is depicted in images or text, it presents both a challenge and an opportunity, as people with disabilities should be inclusively represented in society. Textbooks can become tools for constructing more inclusive cultural conceptions. As Jensen and colleagues argue, when the representation of people with disabilities is absent from many school textbooks, the opportunity and even the challenge of representing people with disabilities inclusively is lost from the outset, contributing instead to their exclusion and invisibility within textbooks (Jensen, Herrebrøden & Andreassen, 2021).

Further analysis should be conducted on secondary school textbooks for both lower and upper secondary levels.

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Wieman, C.J. 2001. *The Effects of Inclusionary Programs on the Self-concept of Learning Disabled Students*. Unpublished Manuscript. The Graduate School University of Wisconsin._http://www2.uwstout.edu/content/lib/thesis/2001/2001wiemanc.pdf.

Title	Publisher	School year (primary school)	Subject	Year of publication
Billy Bot Stories for Super Citizens 1	Pearson	1	English	2021
Billy Bot Stories for Super Citizens 2	Pearson	2	English	2021
Billy Bot Stories for Super Citizens 3	Pearson	3	English	2021
Che facile! Letture 1	Rizzoli/Fabbri-Erickson	1	Italian	2019
Che facile! Letture 2	Rizzoli/Fabbri-Erickson	2	Italian	2019

Che facile! Letture 3	Rizzoli/Fabbri-Erickson	3	Mathematics	2019
Che facile! Matematica 1-2-3	Rizzoli/Fabbri-Erickson	3	Mathematics	2019
Eccomi qui (volume unico)	Progetti sestante edizioni	3	Italian	2018
Giocamici Grammatica e scrittura 2	Mondadori education	2	Italian	2021
Giocamici 1 Letture e grammatica	Mondadori education	1	Italian	2021
Giocamici 1 Matematica	Mondadori education	1	Mathematics	2021
Giocamici 1 Matematica	Mondadori education	1	Mathematics	2021
Giocamici 1 Metodo e prime letture	Mondadori education	1	Italian	2021
Giocamici 2 Storia e geografia	Mondadori education	2	Mathematics	2021
Giocamici 2 Letture	Mondadori education	2	Italian	2021
Giocamici 2 Storia, Geografia e Scienze	Mondadori education	2	History and Geography	2021
Giocamici 3 Grammatica e scrittura	Mondadori education	2	Italian	2021
Giocamici 3 Letture	Mondadori education	2	History and Geography	2021
Giocamici 3 Matematica	Mondadori education	3	Mathematics	2021
Giocamici 3 Storia, Geografia e Scienze	Mondadori education	3	Italian	2021
Imparo l'italiano 1	Gaia Edizioni	1	Italian	2009
La bellezza ci unisce 1	Mondadori education	1	Religion	2021

La bellezza ci unisce 2	Mondadori education	2	Religion	2021
Mega ita (testo operativo) 5	Gruppo editoriale Raffaello	5	Italian	2017
Mia e Leo nel Paese delle meraviglie 1 Letture difficoltà ortografiche e grammaticali	Mondadori education/Minerva elem	1	Italian	2021
Mia e Leo nel Paese delle meraviglie 1 Libro delle discipline	Mondadori education/Minerva elem	1	History, Geography; Science and Technology	2021
Mia e Leo nel Paese delle meraviglie 1 Metodo e prime letture	Mondadori education/Minerva elem	1	Italian	2021
Mia e Leo nel Paese delle meraviglie 2 Grammatica, Scrittura, Arte e immagine	Mondadori education/Minerva elem	2	Italian	2021
Mia e Leo nel Paese delle meraviglie 2 Libro delle discipline	Mondadori education/Minerva elem	2	History, Geography, Science and Technology	2021
Mia e Leo nel Paese delle meraviglie 2 Matematica	Mondadori education/Minerva elem	2	Mathematics	2021
Mia e Leo nel Paese delle meraviglie 2 Teatro, Arte, Musica	Mondadori education/Minerva elem	2	Drama, Art and Music	2021
Mia e Leo nel Paese delle meraviglie 3 Grammatica, Scrittura, Arte e immagine	Mondadori education/Minerva elem	3	Italian	2021
Mia e Leo nel Paese delle meraviglie 3 Libro delle discipline Storia, Geografia, Scienze, Tecnologia	Mondadori education/Minerva elem	3	History, Geography, Science and Technology	2021

Mia e Leo nel Paese delle meraviglie 3 Matematica	Mondadori education/Minerva elem	3	Mathematics	2021
Mia e Leo nel Paese delle meraviglie 3 Teatro, Arte, Musica	Mondadori education/Minerva elem	3	Drama, Art and Music	2021
Percorsi di italiano 5	La Spiga edizioni	5	Italian	2015
Sorridoimparo 2 – Letture	Rizzoli/Fabbri Erickson	2	Italian	2020
Sorridoimparo 2 – Grammatica	Rizzoli/Fabbri Erickson	2	Italian	2020
Sorridoimparo 2 – Matematica	Rizzoli/Fabbri Erickson	2	Mathematics	2020
Sorridoimparo 2 – Storia e geografia	Rizzoli/Fabbri Erickson	2	History and Geography	2020
Sorridoimparo 3 – Grammatica	Rizzoli/Fabbri Erickson	3	Italian	2020
Sorridoimparo 3 – Letture	Rizzoli/Fabbri Erickson	3	Italian	2020
Sorridoimparo 3 – Storia e geografia	Rizzoli/Fabbri Erickson	3	History and Geography	2020
Super Sissi 4 Geografia	Giunti Scuola	4	Geography	2022
Super Sissi 4 Matematica	Giunti Scuola	4	Mathematics	2022
Super Sissi 4 Scienze	Giunti Scuola	4	Science	2022
Super Sissi 4 Storia	Giunti Scuola	4	History	2022
Un libro nel cuore 4	Mondadori education	4	Italian	2017
Un numero dopo l'altro 2	Capitello editore	2	Mathematics	2007

Table 4. Sample.

49.
Schoolbooks and Inclusion: An Exploratory Survey

Damiano Meo[*] and Luigi d'Alonzo[**]

ABSTRACT

This paper describes an easy-to-use tool for evaluating textbooks for an inclusive learning experience. We start by presenting some data collected with an exploratory survey, describe the checklist to assess the inclusivity of schoolbooks, and invite the scientific-educational community to participate in an anonymous micro-survey. Moreover, this contribution will also introduce the construct of "inclusive potential" of the textbook. This expression has been formulated here to convey and include the set of interpretative categories of accessibility, usability, readability and comprehensibility of schoolbooks.

KEYWORDS: *Textbooks; Inclusive potential; Evaluating tool; Italian teachers' opinions.*

Introduction

Nowadays, most schoolbooks show multimedia and iconographic accessories, such as videos, audio, visual dictionaries and interactive exercises. Improving the quality of the educational plan for Special Educational Needs students, and in general, for whole class groups, requires evaluating how such measures can improve students' learning. This aspect would be relevant to teachers, students and editors to manage class complexity more effectively.

Section 1 – Theoretical Framework

According to the UN Convention on the Rights of Persons with Disabilities (CRPD), schools must ensure that "the education of persons, and in particular children, who are blind, deaf or deafblind, is

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delivered in the most appropriate languages and modes and means of communication for the individual" (UN, 2006, p. 17). Moreover, UN Agenda 2030 promotes inclusive education (UN, 2015). From this perspective, in light of the pedagogical approaches of Didactic Differentiation (d'Alonzo & Monauni, 2021) and Universal Design for Learning (Savia, 2016), this ongoing research project proposes to depict textbooks' effectiveness and make them more inclusive. Textbooks are, in fact, intended to support pedagogy and didactics to promote learning for the whole class group.

Section 2 – The Goals of the Action Research

This research action is rooted in the following question:
1) What are the characteristics that make a textbook inclusive?
2) Does today's editorial proposal offer schools inclusive books?
The objectives of the current research are as follows:
1) Understand what the inclusive characteristics of textbooks are.
2) Build textbook analysis tools to guide inclusive teaching.
The planned study process was cadenced in six different and complementary moments. The procedural segmentation put in place was as follows:
  – Phase 1: consultation of the scientific literature.
  – Phase 2: formulation of questionnaires aimed at two exploratory surveys.
  – Phase 3: exploratory investigations: data administration, collection and analysis.
  – Phase 4: construction of textbook analysis tools based on the collected data.
  – Phase 5: pilot and implementation of the tools above through discussions with specialists.
  – Phase 6: dissemination of analysis tools in a natural context.
In this contribution, we will focus on points three, four and five of the list mentioned above. In phase three, two surveys were conducted involving 300 teachers on a voluntary basis. The first survey concerned the textbooks (Meo & d'Alonzo, 2022), while the second was the school e-Books (Meo *et al.*, 2022). This contribution will deal only with the first investigation.

Section 3 – Survey Methodology

The qualitative and quantitative data are based on the results of an expert opinion survey. Answers were gathered online using a questionnaire containing six multiple choices questions, 17 Likert scale queries and three short open questions. Both numeric values and linguistic meanings have been attributed to the Likert scale items. For example, 5 stands for "always", 4 corresponds to "often", and 3 is equivalent to "sometimes", as in **Table 1**.

Ratings	Rating descriptors
1	Never
2	Rarely
3	Sometimes
4	Often
5	Always

Table 1. Values attributed to the Likert scale.

Cronbach's alpha is 85. This coefficient of consistency is considered "reliable". Teachers were recruited through a chain-referral sampling method. The survey contained a privacy notice. 200 participants – from all over Italy – participated. The sample consists of 88.5% women and 11.5% men; this non-uniform distribution seems to reflect the "gender imbalances in the teaching profession" documented by the Organisation for Economic Co-operation and Development (OECD, 2017). The respondents belong to different grades and school orders. 27.5% of participants work in primary school, 49% in junior high school and 23.5% in high school. As for expertise, 55% of the sample has over 10-year experience. As for the teaching area, 37.5% of participants are special educational needs teachers, 18% teach Italian, History and Geography, and 16.5% are specialists in Foreign Languages, 13.5% teach Maths and Science, 10% teach Art, Music, PE, and Technology, and 4.5% are specialists in other subjects (Meo *et al.*, 2022).

Section 4 – Some Results

42.5% of participants stated that only sometimes textbooks fully meet the training needs of the whole class group (**Fig. 1**), and 25% believe that rarely the graphic structure of their books promote orientation and attention of all students. However, 35% of interviewees asserted that videos are always understandable and accessible for the whole class group. In addition, 41% think that photos and images facilitate the understanding of contents, and 25.5% asserted that the digital version of the textbook is always essential for inclusive management of the class group (**Fig. 2**).
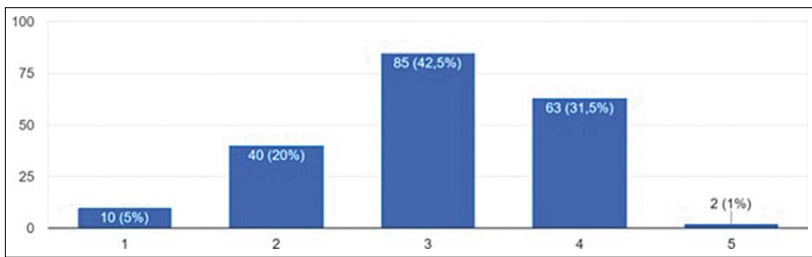

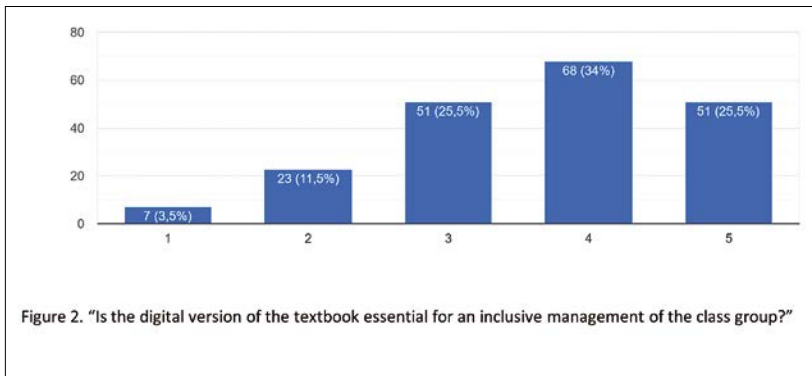**Figure 1.** "Do textbooks fully meet the training needs of the whole class group?"

Figure 2. "Is the digital version of the textbook essential for an inclusive management of the class group?"

Figure 2. "Is the digital version of the textbook essential for an inclusive management of the class group?"

This last aspect is perceived as often effective by 34% of teachers and sometimes significant by 25.5%. However, 39% of interviewees asserted that digital and interactive exercises are sometimes easy for the whole class, but 38% stated that audio-reading is an essential tool. Furthermore, 22% of respondents asserted that rarely maps and graphs are of immediate understanding for all students, and 39% think that only sometimes visual organisers are understandable. Another significant factor is related to the distribution of contents: 41% of teachers think that only sometimes contents in textbooks are organised effectively in paragraphs. 44% of participants believe that the emphasis on keywords helps every student identify the text's salient contents, and 44.5% think that dyslexia-friendly fonts make texts easy to read for everyone.

Moreover, 33.5% of teachers stated that using color for titles and keywords always facilitates reading and understanding of the text; only 1% of participants disagree with the need to emphasise words and headlines. As for the exercises, 41% of participants stated that icons indicating the level of difficulty often help both the teacher in the process of personalisation and the student in skill awareness (**Fig. 3**). Furthermore, 36.5% of teachers consider self-assessment grids often necessary, and only 3.5% have valued this aspect as irrelevant. In addition, 41.5% of instructors believe pair-working and cooperative learning are often efficient methods in schoolbooks.
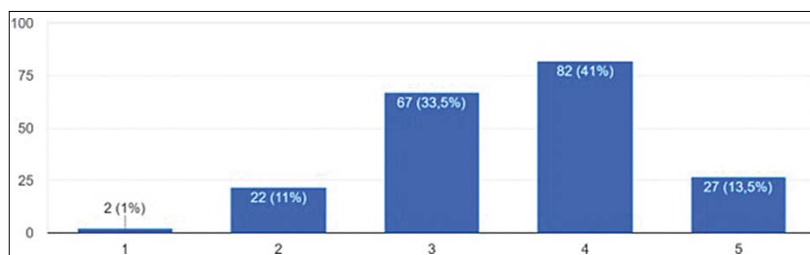

Figure 3. "As for the exercises, do the icons indicating the level of difficulty help both the teacher in the process of personalisation and the student in skill awareness?"

Section 5 – The Assessment Tool

From the survey results, as mentioned earlier, we extracted the features to be accounted for helping teachers select inclusive textbooks. The resulting tool consists of 15 items (**Table 3**). Three numerical values and their respective linguistic meanings have been associated with each item of the evaluation grid: the presence of a characteristic gives 2 points to the final score, the absence 0 points, while the partial presence gives only one point. The total score was calculated out of thirty (**Table 2**).

Scores	The inclusive potential is…
0-18	exiguous
19-21	acceptable
22-24	decent
25-27	good
28-30	excellent

Table 2. Inclusive potential rating.

A textbook that scores less than 18/30 would not show an inclusive potential to support all pupils' learning adequately. However, it is necessary to specify that, since it is an "operator-dependent" tool, the results depend on the previous knowledge and analytical skills of the teacher who uses it. For this reason, it would be functional to propose an intersubjective use involving the analysis support teachers, educators and typhlologists. The term "inclusive potential" has been adopted here with the function of polysemous expression capable of bringing together the interpretative categories of accessibility, usability, legibility and comprehensibility. The definition of "potential" denotes, in fact, in the philosophical and scientific fields, an entity in the process of revealing itself (Hornby, 2005) and well describes inclusion as a multidimensional and dynamic process (Savia, 2016).

In this schoolbook…	Yes	Partly	No
1) Does the graphic structure of the pages promote orientation in the various sections of the text?	2	1	0
2) Do photos and images facilitate the understanding of contents?	2	1	0
3) Are maps and graphs of immediate understanding for all students?	2	1	0
4) Are contents organised effectively in paragraphs?	2	1	0
5) Does the emphasis on keywords help identify the text's salient contents?	2	1	0
6) Do dyslexia-friendly fonts are used?	2	1	0
7) Is the use of colour for titles and keywords effective?	2	1	0
8) Is there a digital version of the book?	2	1	0
9) Are digital and interactive exercises easy to use?	2	1	0
10) Are videos understandable and accessible for the whole class group?	2	1	0
11) As for the exercises, do the icons indicate the level of difficulty?	2	1	0
12) Are there any self-assessment grids?	2	1	0
13) Are there any audio-reading tools?	2	1	0
14) Are there peer tutoring and cooperative learning strategies?	2	1	0
15) Are unusual or rare words accompanied by a practical glossary?	2	1	0
	Tot.		

Table 3. A checklist to assess the inclusivity of schoolbooks.

Section 6 – Implementation of the Assessment Tool

The current version of the analysis grid proposed above is the result of an implementation process. During the "16th International Conference on Textbooks and Educational Media", held in Florence from 6 to 8 April 2022, an anonymous micro-survey was proposed to the participants. The question was: "Do you think this evaluation grid can help the teaching community choose inclusive schoolbooks?". Upon six collected responses, four interviewed stated that the check-list was effective in order to help teachers to choose a good school-book for the whole class group. However, two participants asserted that they would suggest a revision. Consequentially, the structure of the grid remained the same, but some items were reformulated, and the scoring system was slightly improved. Another micro-survey was also launched during the conference "Educational research for teach-er training", held in Perugia from 27 to 28 October 2022, organised by the University of Perugia. 34 scholars took part in the survey. 91.2% of them stated that the assessment tool could be useful for choosing inclusive schoolbooks. On the contrary, 8.8% of responders stated it could be only partially useful. The question was reproposed to the Italian scholastic community on December 2022 through a chain-re-ferral sampling method. 65 participants were recruited. The survey was anonymous and contained a privacy notice. The sample consists of 43.1% teachers, 35.4% support teachers, 7.7% educators, 6.2% pedagogists and 7.6% other figures involved in the inclusion process (typhlologists, communication assistants, etc.). 84.6% of participants answered positively, 10.8% asserted that it could be only partially use-ful, and 4.6% stated that it is not helpful. This last version of the anal-ysis tool was submitted to a pool of ten specialists in order to gather a critical opinion regarding effectiveness, usability and accessibility. The pool comprised two IT researchers, four pedagogical researchers, two ICT typhlologists and two typhlologists. The specialists are the following:

1) Anichini Alessandra, INDIRE researcher, Florence,
2) Angilletta Tiziana, typhlologist, Milan,
3) Bernareggi Cristian, IT researcher and ICT typhlologist, Milan,
4) Cotroneo Antonino, ICT typhlologist, Milan,
5) Fontana Ignazio, ICT typhlologist, Milan,

6) Floriduz Daniela, typhlologist and teacher, Vercelli
7) Landoni Monica, senior researcher at Università della Svizzera Italiana, Lugano,
8) Maggiolini Silvia, researcher at Università Cattolica, Milan,
9) Molteni Paola, CeDisMa researcher at Università Cattolica, Milan,
10) Monauni Anna, CeDisMa researcher at Università Cattolica, Milan.

Respondents unanimously asserted that the schoolbook assessment checklist could help teachers choose inclusive texts.

Conclusions

The process described can be summarised in 3 salient moments: exploration, construction of the analysis tool and its implementation. The first survey has highlighted the characteristics that make a textbook inclusive. The other micro-surveys have confirmed that the above checklist could be useful in order to help teachers to put into practice inclusive learning experiences. From this perspective, collecting more feedback to improve or validate the current version of the checklist will be very significant. We believe, in fact, that participatory research is a defining moment of reflection for the whole educational community. The proposed analysis tool was disseminated among the Italian educational community in the last ten days of February 2023 to support teachers' decision-making from an inclusive perspective.

Acknowledgements

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50.
Use of e-Books in Special Education: What Use?

Barbara Letteri[*] and G. Filippo Dettori[**]

ABSTRACT

The paper presents the results that emerged from quali-quantitative research involving 180 first-cycle school support teachers who participated in a questionnaire and focus groups regarding the following research questions: Does the use of Information and Communication Technologies (ICTs) increase the communicative ability of pupils with language difficulties? What are the most suitable technological applications, which allow facilitating the inclusion and relationality of pupils with communication difficulties? What is the degree of competence in the creation and use of interactive e-Books by support teachers?

They also shared in a specially created repository their experiments in using e-Books in the teaching/learning of pupils with BES.

The research found that teachers still make little use of ICT, and e-Books in particular, as compensatory tools and facilitators of learning and communication, as other studies have also shown. At the same time, the survey shows that when books in digital and interactive formats were used, good results were obtained in the learning and communication of pupils with Special Educational Needs (BES). In addition, the teachers involved in the study emphasize the need for ad hoc training for teaching that makes greater use of technology and, specifically, highlight the need for a repository of best practices related to the use of e-Books to enable more inclusive and effective teaching, especially for students with language and/or communication disorders.

KEYWORDS: *ICT; SEN; Inclusion; e-Book.*

Introduction

The quali-quantitative research, conducted on a sample of 180 support teachers of the first cycle of education, aimed to test the hypotheses related to the questions, defined below, and opinions regarding the effectiveness of the use of innovative educational technologies functional to facilitate the learning of pupils with Special Educational Needs (differently abled, with Specific Learning Disorders and with language

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difficulties). Specifically, the aim is to test the effectiveness of the use of the e-Book, which allows the simultaneous use of *active* mediators, which make use of direct experience, *iconic*, which use representations of graphic and spatial language, *analogical*, which draw on the learning possibilities inherent in play and simulation, and *symbolic*, which use conventional and universal representational codices such as linguistic ones. Technology, in fact, provides support tools (aids, software) that make it possible to overcome the barriers and limitations that a particular disability condition may place on access to educational content, ensuring that all students can participate in activities. It also offers the possibility of using versatile, adaptable and malleable tools that allow educational content to be modified to meet the specific needs of the student (Merkle *et al.*, 2021). In addition, technology can facilitate cooperative and collaborative work in the classroom, allowing each student to make his or her own contribution to the creation of original materials, based on their own skills and resources (Canevaro & Ianes, 2019).

In particular, the e-Book, or digital book, is particularly useful in inclusive education aimed at pupils with learning disabilities. Specifically, pedagogical research (Dettori & Carboni, 2021) and teaching practices have demonstrated its effectiveness with pupils with language disorders. Therefore, the proposed investigation aimed to test the effectiveness of the use of interactive e-Books on the learning of pupils with communication, relational and language difficulties.

The research hypotheses intended to test:

1) Does the use of information and communication technologies (ICT) increase the communicative ability of pupils with language difficulties?
2) What technology applications are best suited to facilitate the inclusion and relatedness of pupils with communication difficulties?
3) What is the level of competence in the creation and use of interactive e-Books by support teachers?

Methods

The research was conducted with the use of two scientific tools that enabled quantitative (Google Form) and qualitative (Focus Group) data collection.

The first tool used was a multiple-choice questionnaire, prepared on Google Forms, by two researchers from the University of Sassari, disseminated on industry social channels and in professional mailing lists, and administered to a sample of 180 support teachers of the first cycle of education. The questionnaire included biographical survey questions ("How long have you been teaching?") and other statistical survey questions with closed-ended responses (yes/no, true/false) and expressions of judgment based on a 5-point Likert scale (from "not at all" to "very much") and other questions with requests for as many answers as possible.

Data were tabulated using pie charts or histograms. In this article, only a few focus areas are represented, due to issues of available space, which were deemed most significant for the research.

In addition, four focus groups (with groups of 10 teachers each) of support teachers from a network of primary and middle schools in the province of Sassari were conducted. The methodology used allowed the researchers a dynamic reading of the phenomenon investigated. In fact, the confrontation that occurs in the group interview, as opposed to the individual interview, encourages the circulation of ideas and promotes critical reflection on issues that are not as simple as those investigated here. The moderator, present in each focus group, encouraged the free flow of ideas from the themes defined in the outline. During the focus group, texts were recorded and transformed into word files and then transcribed in full, which were later used for content analysis, conducted with Atlas.ti software (Friese, 2019). This data analysis program, in fact, is used in qualitative research because it allows, through coding, to determine the main domains and interpretive paths that lead to theory building, through the identification of specific thematic cores. Again, due to the space limitations provided by this call, only those interventions that are considered most significant for the current investigation are made explicit.

This discussion also illustrates some examples of the use of educational e-Books that teachers, who took part in the research, made available for the creation of a repository of best practices in the use of interactive e-Books in special education.

Results

For the reading of the data that emerged during the survey, only some data significant to the survey were taken into consideration and are illustrated in the following order:

A. Multiple-Choice Questionnaire

The questions and answers considered most relevant are transcribed below:

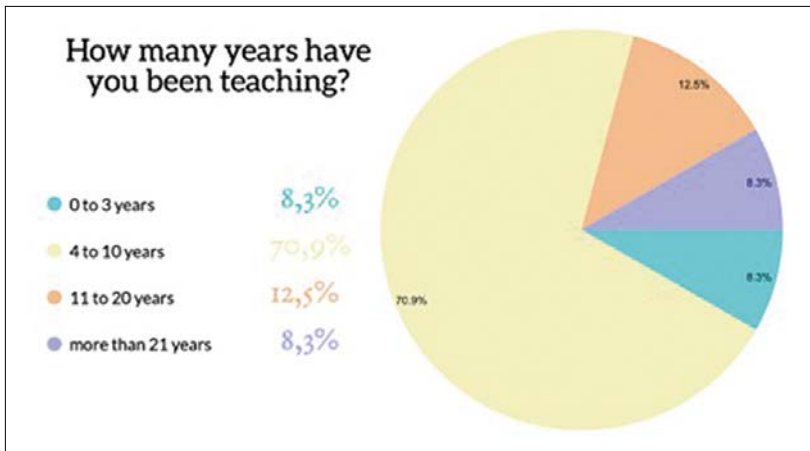1) How many years have you been teaching? (**Figure 1**).

Figure 1. How many years have you been teaching?

Most, 70.8%, teach 4 to 10 years, while 12.5% teach 11 to 20 years. The remaining 16.6% is divided equally between teachers who have been teaching for more than 21 years and newly hired teachers with seniority of up to three years.

2) Do you feel that technologies can be a tool for facilitating teaching? (**Figure 2**).
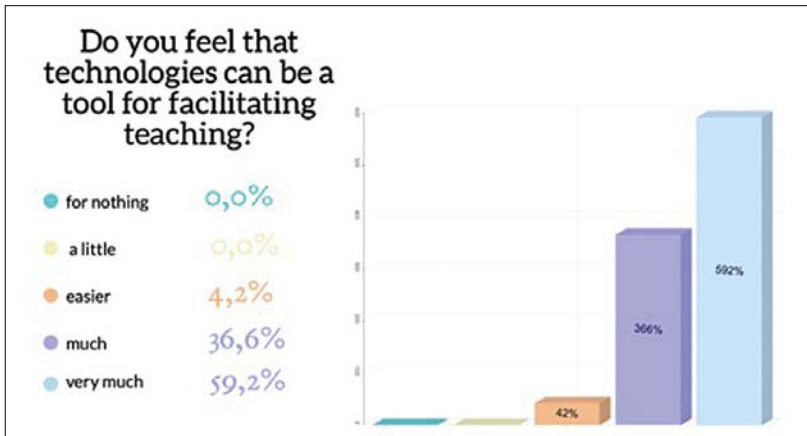
Figure 2. Do you feel that technologies can be a tool for facilitating teaching?

The majority, 95.8%, report that technologies make learning much (36,6%) or very much (59,2%) easier.

Only 4.2% believe that the use of technology tools, apps, and software make learning easier for pupils with Special Educational Needs (SEN).

3) During the period of the student's absence from school, did you perform Distance Learning? (**Figure 3**).
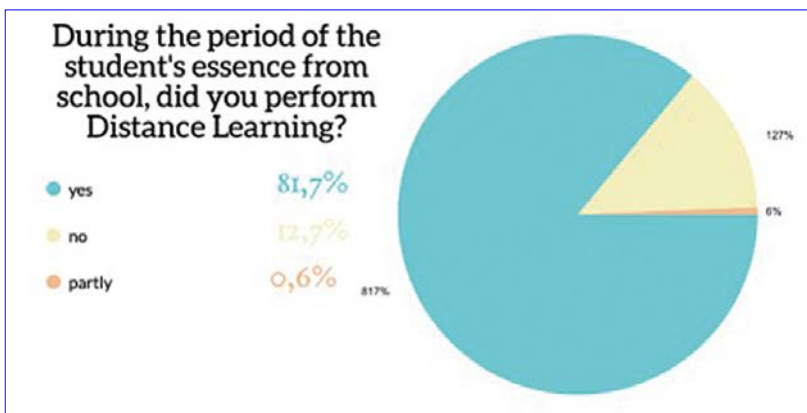

Figure 3. During the period of the student's essence from school, did you perform Distance Learning?

Most, 81.7%, say they activated distance education, while 12.7% did not or did so partially (0.6%) because there was no possibility of using the devices provided to families or disability did not allow the use of devices.

4) What digital story materials and tools did you offer? (**Figure 4**).
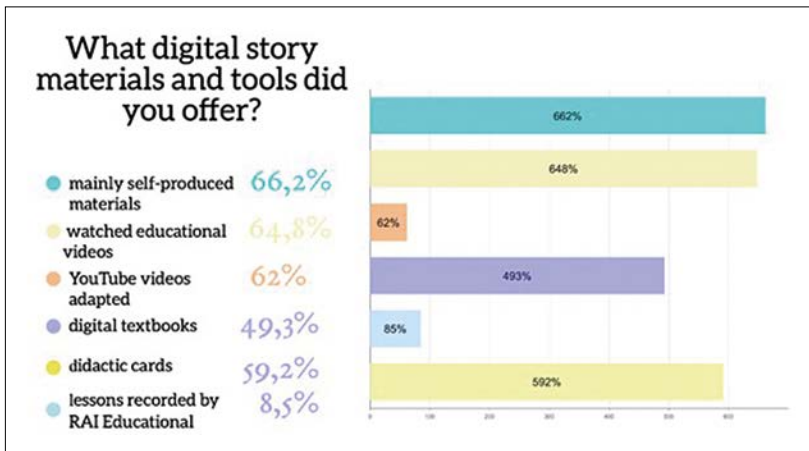

Figure 4. What digital story materials and tools did you offer?

Teachers, in distance learning, used mainly self-produced materials (66.2%), watched educational videos (64.8), YouTube videos adapted to the age of the pupils and specific on the didactic topics covered (62%), digital textbooks (49.3%). Furthermore, specially prepared didactic cards were used (59.2%) and found online (52.1%) and other didactic materials found on the web or ready-made worksheets.

Only a small part viewed lessons recorded by RAI Educational (8.5%), did not propose any material (2.8%) for the reasons described above or video lessons or video tutorials were created for viewing in asynchronous mode (1,4%).

5) Have you ever created teaching materials using interactive e-Books? (**Figure 5**).
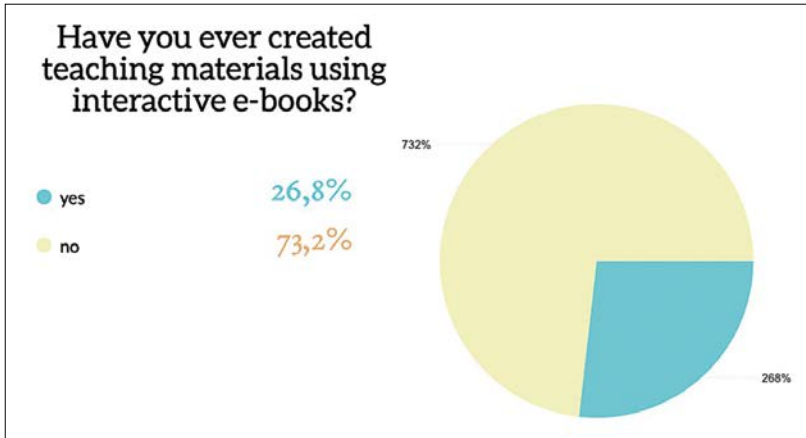
Figure 5. Have you ever created teaching materials using interactive e-Books?

The majority, 73.2%, never created educational material using interactive e-Books, while 26.8% did and the materials were collected in the special Pearltrees repository that will be illustrated below.

B. Four Focus Groups: Just Some Reflections From Focus Groups

To facilitate the presentation of the results, some excerpts of the interviews will be proposed, considered particularly significant, followed by an identifying string that gives some information about the participants, while ensuring their anonymity. The string will indicate the sex (M or F), the order of school in which they play the role of teachers (P - primary, S - lower secondary), the years of service, the focus group in which they took part no. 1 or no. 2, no. 3 or no. 4.

For example: F-P-6-1: indicates that it is a female teacher, who works in an elementary school, has 6 years of service and took part in focus group no. 1 (**Table 1**).

Data	Some reflections:
[F-S-5-1]	"I was very afraid that my pupils with Special Educational Needs would not respond to my teaching proposals. However, the experimentation has created a lot of motivation in these students who have responded with enthusiasm and a significant improvement in the use of both spoken and written language".
[M-S-10-2]	"During the experimentation, I had the opportunity to learn the use of web applications for teaching language learning (Simcaa, Arasaac, etc.) and for consolidating learning (Wordwall, Learningapps, etc.) that proved successful in the experimentation".
[F-P-12-4]	"My students, all of them, discovered new ways of learning that were more engaging, creative and inclusive. They experimented together with interactive book creation activities (with e-Book creator) in which they enjoyed writing conversations in different languages. A true cultural and linguistic inclusion".
[M-P-18-3]	"We created beautiful e-Books with pictures, cards and interactive games (with Liveworksheets) in which we used speech synthesis to help both foreign pupils and other pupils with SEN. A real breakthrough!".
[F-S-15-1]	"I think that all in-service teachers should take qualifying courses to be able to improve their professionalism and to activate innovative strategies that significantly improve teaching practice and allow to counter the risk of school dropout of the most struggling students".
[M-S-8-3]	"At first, I was very skeptical about the effectiveness of using technologies to facilitate the learning of my ADHD student. I thought he rejected it. Instead, to my great surprise, the pupil showed a progressive increase in attention time and increasingly required to carry out learning checks with the aid of online applications (Wordwall) which were considered rewarding moments of gratification as defined by the Token Economy".

Table 1. Some reflections from focus groups.

C. Repository of best Practices: Just Some Best Practices Related to the Use of e-Books

In the first activity, we can observe the use of an e-Book for the consolidation of skills and knowledge of the historical field, in which the reading vowels of the passages have been inserted to facilitate the

reading and understanding of the texts of students with SEN. Presentations created with the Canva application, interactive cards for in-depth analysis and verification with Liveworksheets, gamification tests with Kahoot! and Wordwall and YouTube videos were inserted for the mobilization of motivation to learn.

Figure 6. Presentation created with the Canva application.
Source: https://read.bookcreator.com/eiDtGKWTtvT4te9b3mAQWunb0YJ2/
        Y99MpBcTReutt05Gm-nWsg.

In the second activity, you can see a narration in Italian language, on the Disney movie *Ratatouille*, with many interactive activities: puzzles created with Jigsawplanet and learning tests with memory cards created with Wordwall.

Figure 7. *Ratatouille*, with interactive activities: puzzles created with Jigsawplanet.
Source: https://read.bookcreator.com/TWVgyDYfMngEZHeeeQNfTccMYtE2/
        YmwE8d8-SkuxovN4GVJKiA.

In the third activity, you can see an e-Book created for teaching the mathematics of buying and selling using Pixton, an application for creating comics.

Figure 8. Example of e-Book.
Source: https://read.bookcreator.com/owSA2tYkLTMMLEI1DMRblfe5nyt1/AY-vX4IBuQnmkvlWJzDITBw.

In the fourth example, you can see another exercise on the narrative text related to the animated film *Finding Nemo* with the inclusion of speech syntheses, songs, puzzles created with Jigsawplanet and verification of learning with correspondence exercises created with Learningapps, videos of augmented reality created with Quiver Vision.

Figure 9. *Finding Nemo* with speech syntheses and puzzles created with Jigsawplanet.
Source: https://read.bookcreator.com/RuymcBNuObhSiYcmd5s3Ah4zTGb2/75O2X0J-ToeovfWLgnCjcg.

In the last activity that is illustrated in this discussion, you can see a fairy tale (*The Three Little Pigs*) made in augmentative alternative communication (AAC) with the use of the SIMCAA application and specific for pupils with language or communication and relationality disorders.

Figure 10. *The Three Little Pigs* in augmentative alternative communication (AAC).
Source: https://read.bookcreator.com/9cqV0Ow3KyZY4pbX4IIBakcX9Mb2/
iWRjJL4JRjqRqwRvRlkOgw.

These activities, and many others, have been collected in the e-Books Pearltrees repository (https://www.pearltrees.com/bletteri/eb-ook-e-digital-storytelling/id50506177).

Following the reading of the data that emerged in the surveys carried out, it is noted that there has been a significant improvement in learning and an increase in motivation on the part of pupils who have used the applications for the creation of e-Books, which have been created during classroom experimentation in the school network.

The analysis of the contents that emerged from the focus groups also found that the use of interactive e-Books improved the communication skills of pupils with language disorders and allowed greater inclusion in the peer group and with reference adults.

Discussion

In order to make optimal and functional use of technologies, it is clear that the teacher must first acquire the skills necessary to se-

lect, identify and properly use the possibilities that ICTs offer us, to work productively together with the student with disabilities/SEN to achieve the set learning objectives. But not only that, it must also acquire new methodological skills that move away from the linear logic typical of the traditional frontal lesson.

From the exploratory survey developed in this research, it is evident that still not all teachers feel confident about the basic computer skills they possess, and how they perceive it necessary not only to expand training in this regard, but also to provide continuity over time.

The research found that teachers still make little use of ICT, and e-Books in particular, as compensatory tools and facilitators of learning and communication, as other studies have also shown (Canevaro & Ianes, 2019). At the same time, the survey shows that when using books in digital and interactive formats, good results are achieved in the learning and communication of pupils with Special Educational Needs (BES).

The teachers involved in the study also emphasize the need for ad hoc training in teaching that makes greater use of technology and, specifically, highlight the need for a repository of best practices related to the use of e-Books to enable more inclusive and effective teaching, especially for students with language and/or communication disorders.

The same suggest, also, to disseminate the contents of the repository to allow all interested teachers to carry out continuous self-training on the use of technologies, through access to materials already tested in the school to be considered flexible in use and modifiable according to individual and specific needs.

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Appendix
Educational Resources Produced by Teachers: Avanguardie Educative (Italy). Voices from the Schools

Gabriella Benzi[*], Roberto Castaldo[**] and Pino Suriano[***]

IC Govone (CN) (https://www.icgovone.it/)

I'm Gabriella Benzi, Headmistress of an institute with kindergarten, primary school and middle school, that has claimed the importance of the challenge of the school as a permanent laboratory for research, experimentation and didactic innovation. We met AE, Avanguardie educative, in 2015. Our history of innovation began then: when we realized that the innovation process is a journey through experiences in different contests and strategies and it begins from single prompts for arriving to a systemic change, passing by proposals, prototypes and the possibility to transfer experiences to other schools. I would like to nominate some important key words that guided our work:

Innovation, at first: innovation process involves the use of new teaching methods, new tools and contents that can foster students' creative potential. In this sense, the human factor (the school vision and expertise) together with learning tools and infrastructures are decisive factors for the success of a pedagogical type of innovation path.

Creativity, the second word, or the integration of technologies into daily teaching activities that implies a school vision and a planning of actions to be implemented on three dimensions: the pedagogical, technological and organizational framework.

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Change, the third or equally strategic are four transversal dimensions (strategy, technology, quality and leadership), each of them contributes to creating the overall vision of the school that is generally reported in the guideline and in the PTOF, an important document that describes the global vision of the institute.

Our path goes towards a permanent laboratory for research, experimentation and didactic innovation, starting by a team made up of students and teachers; the aim of this teamwork is to support the dissemination of good practices relating to the use of digital tools in the classrooms.

Innovation has been determined by a number of factors: school autonomy, the guide and the condivision of the headmaster, open school, laboratory and research, increase of digital skills, teamwork with students, teachers and headmaster.

The change happened starting from the innovative spirit of a small group of teachers, a constant support and guide of the headmaster, the productive collaboration and involvement of Animatore digitale, shared projects and teamwork.

The starting point was the reconfiguration of spaces to the remodeling learning environments through some projects, such as Class 3.0, CDD/Integrazione libri di testo, Flipped classroom, Fare scuola, Spazi flessibili, Laboratori del sapere, Curricoli digitali, Outdoor education, Biblòh!, JMS (JAZZ Mood school), Scritture verticali ed epistemiche. Many projects have been supported by UE with PON or national planning.

For example our vision about CDD/Integration textbooks provides a remodeling environment: laboratory, teamwork, cooperative learning as development methodology. It was possible to build a learning community with shared construction of knowledge through the use of digital skills and technology since primary school.

Another framework very important for us is FARE SCUOLA, Reggio Children Approach, that we have developed with observing, then asking generative questions, empower of environments and atelier, the knowledge built through debate, research, reasoning.

In every action and activity the role of the student is active and creative and the teacher is a guide. Recently, on YouTube you can find our WebTV, named MUTAZIONI e MUTAMENTI, this is a work completely created by students about study methods, history, ideas and suggestions about books, music, films, series, video games. Girls

and boys have inspired a general idea related to changing in the way of thinking and in behaviour.

(With the contribute of Elena Iannacci)

ISIS "Europa" Pomigliano d'Arco (NA) (https://www.isiseuropa.edu.it/)

My name is Roberto Castaldo, I teach Computer Science in a technical and vocational institute in Pomigliano d'Arco, a town on the outskirts of Naples.

First off I would like to thank INDIRE, the Avanguardie Educative Team and IARTEM who invited me to this important and prestigious session, but above all I would like to thank all my students whose works you will see – very quickly – today; today my voice will be their voice, today the story I will tell you will be their story, the story of their learning, the story of their passions.

I have always believed in them, and recalling my distant experience as a student, I think I have always looked for someone who believed in me and who wanted to challenge me not only in learning the content of chapters and books by heart, not only in learning static disciplinary contents, always the same and totally detached from real life.

Umberto Eco used to say: "The wise man is not the one who knows when Napoleon was born, but the one who knows where to look for that information in the only moment of his life when he needs it, and capable of doing so in two minutes". Well, at school I learned to use my memory, rather than thinking and using my thinking creatively.

But today I am a teacher, and I have built my approach as a teacher on my school memories and by studying and drawing inspiration from the greatest theorists, pedagogues and psychologists… and from frameworks such as UDL, MLTV.

But let's talk about them, my students, and their works: in the case study I want to present to you today you will find passion, desire to understand, to improve, to make things, which allowed them to create something more than a few slides of a simple presentation.

So let me share with you "memorymakesusfree.org", a digital and emotional journey into the terrible world of the Shoah and the Holocaust, created by 50 students using approaches, technologies,

visual and linguistic codes very different from what you can find in common history books. Let's be honest, school is dramatically failing on history – and on many other topics too. Our students do not know history, maybe they can remember some events and some dates, but they generally ignore all complex processes that led to these events.

Historia magistra vitae, history as a life teacher, Cicero said… but no one seems to have learned this lesson, also because too often schools tend to trivialize history, and the same goes for math, physics, literature… The race to get through massive school programs only succeeds in generating – as Howard Gardner says – a superficial knowledge, a mile wide but an inch deep, ready to quickly evaporate and completely irrelevant to face life's complexity. Gardner suggests going beyond endless school programs, proposing a school based on a few, founding themes, to be studied and analyzed with due care and time: [Gardner speaks of] goodness, beauty and truth. And the Shoah is one of the subjects dear to Gardner, as it allows students to explore it widely (many disciplines) and above all in depth.

David Perkins speaks of learning as the alchemical result of three distinct factors, which should be combined and merged with each other:
– Understanding,
– Wonder,
– Meaning.

And, precisely in an attempt to foster understanding, wonder and meaning, Perkins invites us to make our teaching approach and our entire Schools more "wild", replacing the idea of "tamed", trivializing, notional, dull and repulsive teaching with a more "wild" way of working. We should create a challenging, involving and inclusive school, in which each student is called to commit themselves (and to be evaluated) as a thinking individual.

We should create a school where students feel free to enhance their talents but also to make mistakes; a school where students can discover that being together and learning together is beautiful.

But let's go back to the product Memory makes us free, which, in my opinion, is really very wild: Here is the home page of the fully localized English version (of course we started with the Italian version wew.lamemoriarendeliberi.it and then localized it into English) www.MemoryMakesUsFree.org.

Everything you will see has been designed, developed and published by my 50 students, aged 16 to 20, in about four months (several hundred hours) of work, almost exclusively in remote learning, coordinated by me and three wonderful colleagues of mine, with the concrete support of the Auschwitz Museum and Memorial, and under the supervision of international historians, first and foremost Professor Marcello Pezzetti (consultant to Roberto Benigni and Steven Spielberg in their movies on the Shoah).

Let's start from the home page, there are about 50 Web pages, divided into macro-areas, but most importantly, it is possible to visit in virtual reality the Auschwitz extermination camps, gathering information, suggestions and emotions along the way.

Emotions, because no deep learning can exist without emotions, nor can historical facts truly become life teachers without them.

And here we are in the virtual environment (also here every photo, every graphic element, every single word… everything was made by my students), where – for example – we are visiting the extermination camp of Auschwitz 1, please observe the 360 degrees images we shot on site… the camp entrance that is on all history books… This vision is already moving by itself, but we have added information to have a complete knowledge of the facts, contexts, of the victims above all.

The journey continues following the directions, using a PC or a smartphone, or even better a VR viewer, even cardboard ones are fine… You enter the camp, move around, explore buildings, rooms, collect information, watch videos (there are about 20 videos in the whole path)… or you can decide to go back to the home page… and enter Auschwitz 2 – Birkenau… Another well-known image, and many other stories, whose words can be read and listened to, alongside music, images, videos…

A peculiar place is the "questions room": it is the gas chamber of Auschwitz 1, whose walls we filled up with questions to which we tried – where possible – to give an answer to… or … the "media room"… Here there is a jewel made by Arianna, one of my students: a series of digital works, created from photographs taken by us inside the camps. Arianna has seen the photos as a starting point on which to create new suggestions, able to further amplify the emotions… These images are strong and delicate at the same time, and I would like each of you to invest a little bit of your time on them, perhaps together with your students.

"Memory makes us free" is a journey that can last several hours, if you want to dwell on all its contents, and that tries to provide a non-trivial tale and, in our intentions, a dutiful homage to all the victims of the Nazi fury. But Memory makes us free has also become the reference point for dozens and dozens of schools, for hundreds of students all over the world, who use this resource to study that terrible historical period; my students have created a kind of digital, immersive and emotional textbook for other students and this somehow closes the circle of their manifold learning process, which encompassed the following activities:

– Writing digital content,
– Developing and managing Web portals,
– Developing Web applications in virtual reality,
– Graphics and photos editing,
– VideoMaking,
– Digital content localization,
– Web streaming events,
– Creation of artistic digital drawings.

All activities have been designed to be performed in presence, adapted for remote working, then evaluated using appropriate evaluation rubrics; on closer inspection this trans-disciplinary product, together with many others that I have created with many other students, on various topics, is not the result of a single methodology, but is the mix of various approaches: it is easy to find in this product the seeds of learning by doing, flipped classroom, service learning… and perhaps many others too.

But in my opinion this is a winning approach to establish students as key players, to overcome the depersonalizing and trivializing old school, to rethink teaching, to imagine new learning environments, including digital ones, in which to kindle the students' passion for studying, collaborating, improving themselves, it is a winning approach, I think, to encourage the birth of a new generation of citizens that will be able to think independently and joyfully serve their own communities.

Liceo "Enrico Fermi" Policoro (MT) (https://www.enricofermipolicoro.edu.it/)

My name is Pino Suriano, and I am a high school teacher in Basilicata, in Southern Italy. Before becoming a teacher, I was a journalist for five years. When I started teaching, in 2006, one of my objectives came to me almost automatically: to bring the communication world into the school world.

First of all, it meant bringing some essential aspects into the school world: the "concern" toward my audience, to take care of them, so clarity, importance of the content but also entertainment, or rather the ability to capture and hold the listener's attention.

This kind of concern isn't really present amongst teachers (all of us try to be communicative) but we seldom take in consideration the student's need to communicate.

My general intentions took shape on one day in February 2017. My Headmistress called me into her office and said: "A student has asked me to go to a TED meeting because it would be a significant and cognitive opportunity. I don't know what it is: Do you think I should give importance to this request?".

At that moment, an instant intuition came to my mind: the students shouldn't just listen to TED talks, they must give TED talks; they must express themselves. A learning model was created: the Microconferences.

What is it? It's a learning activity aimed at an oratory performance lasting from five to a maximum of fifteen minutes, with the help of slides (PowerPoint, Keynote) or other multimedia supports, on school learning topics, also in a thematic and transversal key.

The initial proposal was simple: if you had a microphone and an audience, what would you talk about?

However, it's not a normal training ground for public speaking; I'm proud to say that it's much more than TED. Especially because as a school we had three concerns:

1) to base the speech on educational content;
2) to base it on research (selection, organization and reworking of the information);
3) and especially, since I'm an Italian teacher, to base it on a written work, a specific writing typology that I can define as writing for oratory.

Phases

From my experience, a learning model was created with some defined phases.

1. The models: to show both microconferences made by other students and communication models from the television or network world (for example Roberto Benigni for the communicative connection with a literary text, *The Divine Comedy*; Alberto Angela, an Italian TV presenter to report artistic and cultural heritage; Alessandro Barbero, an Italian historian and academic for the historical narration, or the TED-X itself for the exposition of ideas). I'm using these examples because I want to show how they rielaborate a knowledge content to produce entertainment.

2. Choice of the topic, with a teacher's supervision.

3. Research: students commit to researching the information and the content. Be careful: when you look for the contents with the purpose of entertaining, a lot of things change, you begin to search for what you find surprising, to enhance the original issues. Young people become real "bounty hunters" in the sea of knowledge.

4. Writing of the "oratory" text: after doing the research, the student begins to write the text, considering its oratory purpose with aspects typical of the spoken word, such as pauses, body language, etc.

5. Peer feedback: every student starts working on their own text at home. During the group work, the text is projected on a screen and performed by the author. Here the other students can propose hypothetical changes, both in terms of words choice and in terms of cinematographic post "editing" or, for example, a phrase or a particularly meaningful quote can be moved at the end, after a companion suggestion. This moment is important because it lets you to understand the reactions of a potential audience; it teaches you to receive feedback.

6. Slides: they can be PowerPoint, Keynote, Prezi or other clips. They're not used and conceived in the usual didactic perspectives (typical of the common academic lesson). They have to

be conceived, let's say, "at the service of the word" (for example with surprising images, to spark questions and curiosity; few punchy words.

7. Concluding performance: a final show, a sort of school recital or a concert at the end of the year, but this time the student doesn't act out the script written by another person, but his own text and so the outcome of his creativity and research.

We immediately noticed that in this way you can improve cognitive skills significantly. Moreover microconferences can be an alternative to the common evaluation model, the oral test, with a distinctive trait that is used during the microconferences: you don't talk to a person who already knows the facts (or knows them in the same order), but you are offering a new approach to generate interest for the listener.

Maybe, of all the tasks, the ability to carry out research, the selection and organization of knowledge with a final objective, seems to be the real challenge of our time: in the face of easier access to knowledge, what is more important than learning discernments and methods to navigate the sea of knowledge?

I am convinced that never before, with digitalization of knowledge, it has been so important to relate to the knowledge with a final objective.

Non-Cognitive Skills

Furthermore, in Italy a law has just been passed in "Camera dei Deputati", which invites us to develop non-cognitive skills such as self-confidence, creativity, empathy and integration.

In fact the path touches:
– the strings of self-confidence (you can do a brave thing, it puts you in front of an audience at 14-15 years old… and maybe a lot of us don't have the courage to do this before our 30s);
– the string of creativity (the student creates something previously didn't exist);
– the string of empathy (the feedback phase helps you to relate to the point of view of another person) and it's also a very good tool for the outgoing orientation, to test yourself, and in

          terms of incoming (it demonstrates a new kind of school, not a promotion by adults, but the story of the student's actual dedication).

So, I've been talking about the process so far, but also the result is important, because it's not only just a learning opportunity, but also a learning tool.

This happens because with the passing of the years the teachers who had worked a lot started to propose to their new students the microconferences created in the years before.

After all, with the pandemic, thousands of teachers, who had never done it before, started to show videos online where they explain or summarized school contents.

Well, why not learn from the student's work too? When the teacher has kept an eye on the sources, he becomes a sort of scientific guarantor.

So we have a content with the mindset of students, produced with the feedback of students.

The students have dealt with very interesting topics in microconferences, such as the new discoveries of Physics; the origin of life, in a scientific view; a philosophical dialogue about love; the role of heroes and their helpers in literature; creative text analysis about poems or songs.

This is my hope, which should be also a national goal: the realization of a database with these products, that could facilitate the research with keywords and appropriate categories.

So the oral process that becomes instrumental both in the process and in the product. It becomes extra content for a textbook.

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This volume collects some of the papers presented at the 16ᵗʰ IARTEM Conference held in Florence in April 2022. It was a 'difficult conference', held at a time when the pandemic was still present, and therefore an important opportunity to resume a dialogue that seemed to have been interrupted. The richness of the content, which is the result of the reflections of authors from all over the world, allows us to provide a precise scenario of the research state of art in the field of textbooks and digital resources for teaching.