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Stereotypes of the "female" in XIX and XX century textbooks for Italian schools

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Introduction

This contribution presents the outcomes of a research carried out by INDIRE on the theme of "representation of female". Previous research (Anichini, Giorgi, 2020) investigated the representation of the idea of the "foreigner" within textbooks and children's literature for use in Italian schools between the nineteenth and twentieth centuries. Now, the same sample of textbooks and children's literature was investigated with the aim of describing how some stereotypies have been formed and spread and are enduring over time, even within profoundly changed political and cultural contexts.

Some key concepts underline the research: 1. the definition of the concept of "imaginary," linking to a topic that is so central today and we can summarize as "representation of female"; 2. the concept of "educational media", including the school itself as a "medium" with respect to the cultural content of a society; 3. the idea of stereotype, a "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).

When we speak of "imaginary", we are referring to a theory that draws on a long cultural tradition. Since the 1920s 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). It is widely established that children's literature and textbooks contribute and have contributed to the defining opinions, attitudes and cultural habits of students. Textbooks, digital content, such as educational experiences conducted within the school are included in the category of "educational media" (Bruillard E., Anichini A., Baron G. L., 2019), and all of them play a very important role in education.

Methodology

Starting from these assumptions, we tried to trace inside some textbooks that are part of a fund of INDIRE heritage those symbolic systems that define the stereotype of "female". The analysis was conducted according to grid and taking into account the linguistic contents and also the iconic representation present in the textbooks. Language contributes, in fact, to the creation of "*zones of meaning*", "*immense edifices of symbolic representations that seem to tower over*

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everyday reality like gigantic presences belonging to another world" (Berger and Luckmann, 1969 p. 64). Like words, also images 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. For analising materials, we used some grids elaborated according to a literary review on the theme and empirically adjusted during the research path.

References

Anichini, A., Giorgi, P. (2020): *Lo straniero di carta,* Roma, Tab Edizioni

Berger P. L., Lukmann T., (1969): *La realtà come costruzione sociale,* Bologna, Il Mulino

Biemmi I., (2017): *Educazione sessista. Stereotipi di genere nei libri delle elementari, Rosenberg & Sellier*

Bruillard É., Anichini A. & Baron G. L. (2019): *Changing media – changing schools? IARTEM 2017, 14th International Conference on Research on Textbooks and Educational Media.* University Lusófona, Lisbon, Portugal, 27–29 September 2017

Fidler, R. (2000): *Mediamorfosi. Comprendere i nuovi media*: Roma, Guerini e Associati

Tisserant, P., Wagner, A.-L. (dir.) (2008): *Place des stéréotypes et des discriminations dans les manuels scolaires.* Rapport Final Réalisé pour le compte de la Haute Autorité de Lutte contre les Discriminations et pour l'Égalité. Université de Metz

What teachers want, what textbooks offer and the Climate Change in between - Themes in Brazilian Secondary School Textbooks

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Textbooks are the single pedagogical resource consistently distributed to Brazilian teachers and students. Every four years, the Brazilian textbook distribution program (PNLD) can be changed, introducing innovations that require an evaluation of their relevance and impact in the classroom. In the current cycle of Brazilian secondary school education, one of the innovations has been the interdisciplinary project textbooks. Organized into four areas – Languages, Mathematics, Natural Sciences, and Humanities – each textbook features six projects contextualized around different themes. The topic of climate change, an urgent issue of our time and therefore necessary for discussion in schools, can manifest more explicitly, such as in a discussion on global warming, or less explicitly when working with themes like water, sustainability, and energy. In this context, understanding which themes are present in textbooks, which are of interest to teachers, and whether environmental education is part of these themes constitutes a relevant research problem for the educational field. Two research questions then arise: Is there alignment between the themes preferred by teachers and the selection of themes in textbooks? Is climate change present in textbooks and is it part of teachers' interests?

To answer these questions, this research first analyzed the themes present in the 18 Language textbooks, 14 Mathematics textbooks, 13 Natural Sciences textbooks, and 19 Humanities textbooks approved by the PNLD. These are the textbooks available for teachers to choose from and will be distributed to all Brazilian secondary school students. Subsequently, a survey was conducted in 2022 and 2023, where teachers were asked about their interest in a pre-supplied list of themes, including all the themes present in textbooks, with the possibility for respondents to add new ones. The survey was answered by a sample of 2047 teachers, generating the ranking of various themes on a scale of 0% to 100% interest for each of the four areas.

Diversity (89.6%), Narratives and languages (88.6%), and Media and communication (88.2%) were the preferred themes in the Language area. Afro-Brazilian and indigenous history and culture (89.3%), Diversity (88.5%), and Ethics and politics (88.3%) in the Humanities area. Water (91.4%), Environment and sustainability (90.8%), and Health and the human body (90.5%) in the Natural Sciences area. Personal finance (88.1%), Art and mathematics (85.2%), and Inclusion (84.5%) in the Mathematics area.

These themes preferred by teachers are not the most present in textbooks approved by the PNLD, indicating a need for adjustment of themes for future program editions. In the four areas, only one of the most interesting themes for teachers is frequently present in interdisciplinary project books: Diversity in Languages (present in 11.0% of projects) and Humanities (10.5% of projects); Environment and sustainability in Natural Sciences (13.9% of projects); and Personal

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finance in Mathematics (8.8% of projects).

About the presence of themes related to climate change in textbooks and in teachers' preferences, in a broader perspective of environmental education, where discussions on water resources, energy resources, the environment, sustainability, and consumption habits can be understood as related to climate change, teachers' interest is relatively high, although not sufficient to place the subject among the top three most interesting themes: 87.6% interest among Language teachers, 88.2% in Humanities, and 83.5% in Mathematics. The exception is the Natural Sciences area, which, with themes like water, environment, and sustainability already in the top 3, has an overall interest of 90.9% in subjects related to climate change.

In this broad sense, the topic of climate change is also relatively present in approved books: 18.1% of projects in Natural Sciences; 12.1% of projects in Mathematics, and 8.9% of projects in Humanities. The exception is only the Languages area, with projects involving only 2.4% of projects related to climate change.
Therefore, there is a scenario that requires adjustments to the PNLD for the themes present in textbooks to align more with teachers' interests and, especially in the case of Languages, a greater demand for environmental education, particularly concerning climate change, to be included.

Interculturalities in tension through French language pedagogical resources development in Uzbek universities

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This communication aims to characterize and identify some of the intercultural tensions that exists between two countries, France and Uzbekistan, through the lense of the educational resources of French as a second language that circulates in uzbek universities. Educational resources are linked to the socio-economic and cultural context in which there are developed and, we can then considerate them as cultural objects moving in society (Le Marec, 2009), which contains intrinsequely some values. As cultural objects carrying values and ideologies, the pedagogical resources are then keys to understand some intercultural tensions between countries.

Situated on the Silk Road, Uzbekistan represents a link between China, Turkey and Europe, west and east, and is becoming a second destination for many institutions and compagnies that don't have access anymore to Russia. The young republic of Uzbekistan multiply the exchanges and partnerships with european countries, including France, while maintaining a strong state ideology (Bazin, 2009). In that context, universities are closely monitored by uzbek government, who want to train a new generation of tertiary workers, who can work internationaly. This process of massification and modernization of education influence the universities ressources development, and especially the Foreign language resources.

This communication will present the preliminary results of the qualitative study conducted in Uzbekistan in April and November 2023 in three universities based in Tashkent and three French public institutions (45 qualitative interviews and 40 hours of classroom observations).

It will explore three main intercultural tensions between the two countries that have been brought to light :

Conceptualisations of the market economies of textbooks and pedagogical resources in confrontation

Tensions between two professional and administrative cultures : contrasted institutional expectations in French and Uzbek establishments

Power imbalance: how values and ideologies lies within resources and are influenced by the resource control and pedagogical mediums.

These intercultural tensions of the French language resources in Uzbek universities are analyzed as part of an ongoing doctoral research, that is based on a triple methodology.

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*Speaker

A socio-economical analysis of the key players, privates and institutionals, and their productions in the field of French Language resources in Uzbekistan was first essential to explicitate the socio-economic framework in which the resources are developped, how they circulate and how they are prescribed.

Then, a qualitative study has been organised throughout 2023 online and on-site, to analyse how the university French language teachers choose and use these resources in uzbek universities.
40 qualitative interviews of teachers in 3 uzbek universities (National University of Uzbekistan, World Language University, University of Transports) have been conducted, followed by hours of ethnological observations in Uzbek university classrooms.This interviews and observations were held in Uzbekistan between April and November 2023 and shed light on many intercultural tensions.

This PhD work will be ultimately completed by a techno-semiotic analysis of the resources used by the teachers, in order to understand to determine the link between their formal configuration, their uses and the economic, political, organizational and educational issues, in the specific Uzbek context.

Abdallah-Pretceille Martine, L'éducation interculturelle. Presses Universitaires de France, " Que sais-je ? ", 2017, ISBN : 9782130787631. DOI : 10.3917/puf.pretc.2017.01
Bazin, A., Hours, B., Sélim M. (2009) L'Ouzbékistan à l'heure de l'identité nationale. Paris : L'Harmattan.
Frame, A., Sommier, M. (2020) Penser les tensions interculturelles en organisation. 58. Communication & Organisation. https://doi.org/10.4000/communicationorganisation.9187
Le Marec, J. (2009), "Situations de communication dans la pratique de recherche : du terrain aux composites", Études de communication . 25 — 2002 http://journals.openedition.org/edc/831; DOI: https://doi.org/10.4000/edc.831
R'Boul H, Dervin, F. (2023) Intercultural Communication Education and Research. Routledge. https://doi.org/10.4324/9781003395225

What Are They Doing When They Stare at the Map? Exploring Map Decoding Task Processing Using Eye-Tracking

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One of the mysteries teachers encounter is what happens in students' minds when they stare at a map and struggle to solve a 'simple' task. While there is no shortage of literature advising teachers on the best methods to teach map skills and numerous tests support their assessment of map skills, what students do during task processing remains a black box. This paper aims to sneak peek into the black box using eye-tracking during map decoding task processing.

Research in geography education looks back on a considerable tradition and, as Hüttermann (2007) argues, geography educators repeatedly stressed the differences between continuous text of a novel and discontinuous text, such as pictures, graphs, and maps. Reading a map is fundamentally different from reading a book, as it lacks a clear starting point (left top in English) and a direction of reading (from the left to the write, from the top to the bottom, in English). Map reading offers the luxury of starting at any represented content detail or systematically going through the title, legend, scale, and orientation. Still, reading a text or a map is a similar cognitive challenge as both formats require knowledge of the codes. What letters, words, and sentences are to the continuous text, symbols, colors, and scale are to the map. Thus, to a certain extent, acquiring the ability to read a continuous text and a map retains a certain similarity. Therefore, Hemmer et al. (2010) heavily relied on the PISA Model of Reading Literacy (Baumert et al., 2001) when they developed the Map Skills Model; however, given that maps combine text with visual information, they also considered the Integrated Text-Image-Understanding Model (Schnotz & Bannert, 2003). The Map Skills Model constitutes the main framework of reference for this paper. Building upon previous research on map decoding, this paper explores what students do during task processing using eye-tracking. Therefore, its aim is twofold. Beyond the specific findings, the present study also aims to reflect on the method and its potential for further development for future studies.

Eye-tracking served to collect data on students' strategies when solving tasks requiring map decoding. The test persons wore a portable eye tracker while observing the stimuli on a laptop screen. Following an initial exercise to get acquainted with eye-tracking and answering any open questions, a welcoming slide announced the test's commencement, followed by five slides. Each slide entailed a stimulus consisting of the task and a thematic map of Australia. Following data collection, time stamps helped determine the task processing duration. Subsequent close watching allowed for the determination of the eye movement trajectory. The final sequences are the result of compared codes by two independent researchers.

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*Speaker

Following ethics clearance, two geography teachers facilitated access to seventh- (age 13-14 years) and tenth-graders (aged 16-17 years). The study took place in the Hungarian city of Szeged. This study's sample consisted of two students and remains exemplary. It presents the findings on a low-achieving seventh-grader and a high-achieving tenth-grader based on their teachers' feedback on their map skills.

The preliminary results uncovered several similarities and differences between the novice and the expert student. Data processing is currently still in progress.

Baumert, J., Klieme, E., Neubrand, M., Prenzel, M., Schiefele, U., Schneider, W., Stanat, P., Tillmann, K. J., & Weiss, M. (eds.) (2001). *PISA 2000. Basiskompetenzen von Schülerinnen und Schülern im internationalen Vergleich (PISA 2000. Students' Basic Concepts in International Comparison).* Leske und Budrich.

Hemmer, I., Hemmer, M., Hüttermann, A., & Ullrich, M. (2010). Kartenauswertungs-kompetenz. Theoretische Grundlagen und erste Überlegungen zu einem Kompetenzstrukturmodell (Map Interpretation Skills. Theoretical Framework and First Thought Concerning a Competencies Model). *Geographie und ihre Didaktik — Journal of Geography Education, 38*(3), 158–171.

Hüttermann, A. (2007). Karten als nicht-kontinuierliche Texte" (Maps as 'Discontinuous Text'). In M. Geiger & A. Hüttermann (Hg.), *Raum und Erkenntnis (Space and Insight)* (S. 118–123). Aulis-Verlag Deubner.
Schnotz, W., & Bannert, M. (2003). Construction and Interference in Learning from Multiple Representations. *Learning and Instruction, 13*(2), 141–156.

Shifting Spatial Representations. A Comparative Study of Maps in Lower-Secondary Geography Textbooks in Post-Socialist and Post-Soviet Countries

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When thinking about maps, one of the first associations is the school atlas and the Geography lessons. Indeed, maps constitute a unique cultural artifact allowing for a condensed and dynamic representation of space. While drawings and the occasional pictures served the purposes of visualization, historically, Geography textbooks primarily relied on maps. Given the economic constraints, textbooks in former socialist countries were heavy on text with a minimum of (monochrome) visualization. Scholarship on textbooks in former socialist countries and the USSR primarily focused on textbook content, with a few studies dedicating attention to textbook markets, authors, and their path-dependencies (cf. Bagoly-Simó, 2016). Recent endeavors also viewed textbooks against the broader background of childhood experiences and memories (Silova et al.,2018) and their role as instruments to transmit Marxist-Leninist ideology (Ilovan et al., 2018). Drawing upon these studies, the present study contextualizes Geography textbooks within the main framework of path-dependent (Burawoy & Verdery, 1999) hybrid structures. The post-socialist and post-Soviet condition is best conceptualized as a continuation of socialism with hybrid structures that combine path-dependent elements of the socialist past with those emerging since the 1990s. Following the fall of the Iron Curtain, emerging educational media publishers entering the liberalized market produced visually overloaded textbooks. Along with novel design and layout, content and authorship displayed, as Bagoly-Simó (2016) argues for Romania, path-dependent hybrid structures. It is such hybrid structures that this paper aims to explore further. Thereby, its aim is twofold. On the one hand, this presentation seeks to examine the change in cartographic representation during post-socialist and post-Soviet transformations. More specifically, it aims to collect detailed data on the typology and distribution of cartographic representations within the gradually diversifying world of discontinuous text. On the other hand, the paper seeks to uncover ties between cartographic representation and geographical content. The operationalization rested on a mixed-methods approach. The sample consisted of Hungarian, Romanian, and Ukrainian Geography textbooks for lower secondary education. The comparative approach allows for a broader scope within the post-socialist and post-Soviet space. The focus on lower secondary education roots in its mandatory status in all three countries and the independent status of Geography as a school subject. For each country, the sample consisted of a set of textbooks published during the 1990s and the latest edition for Geography. In the first step, content analysis explored the typology of discontinuous text types. Thereby, discontinuous text featured in the textbook constituted the analytical unit (e.g., pic-

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ture, table, graph, map, satellite image). The second step turned to cartographic and map-like representations, closely recording their typology, location, and distribution. Two researchers coded 15 percent of each country-specific sample, securing intercoder reliability. Subsequent quantification allowed for the application of descriptive statistics. The preliminary results show both similarities and particular features of cartographic representation during the last three decades. The three country case studies share the common trend of visual overload, with pictures dominating the discontinuous text. Furthermore, there is an overall specialization on thematic maps.

Bagoly-Simó, P. (2016). "1989 and all that": Geography Textbooks During Post-Socialist Transformation. Post-Socialist Transformation in Romania. In E. Matthes & S. Schütze (eds.), *1989" und Bildungsmedien. "1989" and Educational Media. Beiträge zur historischen und systematischen Schulbuch- und Bildungsmedienforschung* (pp. 99–108). Klinkhardt.

Burawoy, M., & Verdery, K. (1999). *Uncertain Transition. Ethnographies of Change in the Postsocialist World.*Lanham: Rowman & Littlefield.

Ilovan, O.-R., Bagoly-Simó, P., & Herbstritt, G. (2018). Visual Discourse in Romanian Geography Textbooks during Socialism (1948-1989). *RRGE (Romanian Review of Geographical Education), VII*(2), 59–70.

Silova, I., Piattoeva, N., & Millei, Zs. (2018). *Childhood and Schooling in (Post)Socialist Societies: Memories of Everyday Life.* Springer International Publishing.

Keywords: maps, cartography, post, socialism

How Is Critical Thinking Conceptualized in Online Resources? The Case of the French YouTube Channel "Hygiène Mentale"

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Research problem

Fostering critical thinking (CT) is considered a major educational objective in most countries, viewed as such by policymakers, researchers, and educators alike. However, the meaning of this concept lacks consensus, as evidenced by the numerous definitions proposed in the literature (Lai, 2011). In my PhD research, I investigate the various conceptions of CT in the French educational context. Through interviews with secondary school teachers, it has become apparent that a significant number of them use YouTube videos on this topic as educational resources. What is the content of these videos? What view of CT do they convey?

This communication presents a case study of the YouTube channel most frequently mentioned by teachers, called Hygiène Mentale (Mental Hygiene). Its content deals with Scientific Skepticism. It was created in 2014 and contains 52 videos with a usual duration of about 20 minutes. As of January 2024, it had more than 392 000 subscribers. Our research questions are as follows:

RQ1. How is CT being described and presented by this YouTube channel?

RQ2. To which concepts and practices is CT associated in this resource?

Methods

7 of *Hygiène Mentale*'s videos were selected: the 3 most viewed ones and 4 that were mentioned by teachers during interviews (see table 1 in the attached files). Qualitative content analysis (Bardin, 2013) was used to identify recurring elements. As the goal of this study is to understand the youtuber's understanding of CT within his own framework, no pre-established analysis grid was used.

The videos were watched twice to identify their main themes and the key notions presented. Then, the subtitles of each video were downloaded to get written transcripts of the youtuber's discourse, search for every mention of CT and examine how the notion is used and described. The diagrams displayed in the videos during these sections were extracted and analyzed as well.

Preliminary results

The videos are written and produced by a former physics teacher turned computer graphics designer. His target audience was the skeptic community but reached a much wider audience. For teachers his videos thus qualify as resources by opportunity (Puimatto, 2014). They usually

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*Speaker

contain tips and advises on how to improve one's reasoning to become more rational or how to better search and verify information online. They are based on his own experience and personal ideas, as well as explanations of some notions drawn from logic, statistics, psychology, and epistemology that he deems useful to help people think more critically in their everyday life. He also relies on maxims and rules of thumb taken from scientific skepticism (Vuolanto & Kolehmainen, 2021) and equates CT with this intellectual and social movement.

CT is presented as a form of "intellectual self-defense", a means for individuals to protect themselves against manipulations and illusions, such as disinformation, pseudoscience, and their own unjustified beliefs. It is compared to a sieve used to sort out which ideas or information one should accept as true and let enter their mind.

CT is strongly associated with "the scientific method" consisting of formulating hypothesis about a phenomenon, creating rigorous experimental protocols and statistical analysis to test them. According to the youtuber this method can also be used in everyday life to evaluate various claims relating to knowledge.

The vision of CT conveyed by this YouTube channel is imbued with radical positivism (Dauphin, 2022) and is sometimes at odds with contemporary scientific literature on this topic. For instance Lai's review (2011) does not mention "the scientific method" as part of CT nor the use of maxims to promote it.
Besides, though teachers enjoy this channel's content, most of it does not align with the curriculum.

References

Bardin, L. (2013). *L'analyse de contenu*. Presses Universitaires de France. https://doi.org/10.3917/puf.bard.2013.01

Dauphin, F. (2022). Succès et limites du debunking pour lutter contre la désinformation. *Questions de communication, 42*. https://doi.org/10.4000/questionsdecommunication.30076

Lai, E. R. (2011). Critical thinking: A literature review. *Pearson's Research Reports.*

Puimatto, G. (2014). Numérique à l'École – usages, ressources, métiers, industries. *Distances et médiations des savoirs, 2*(5), https://doi.org/10.4000/dms.509

Vuolanto, P., & Kolehmainen, M. (2021). Gendered Boundary-work within the Finnish Skepticism Movement. *Science, Technology, & Human Values, 46*(4), 789-814. https://doi.org/10.1177/0162243920947475

Digital and non-digital tools for adult education in French companies

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Context, research question and method

The rapid changes due to companies' digitization make us wonder about the tools implemented in training courses (face-to-face, distance, hybrid) for companies' workers, and explore their uses. As a group of 13 students in an apprenticeship Master 2 (sandwich course) working in various training departments, we are confronted with the choices made framing the work we do there.

The aim of this study is to take stock of the digital tools used to produce and distribute educational content in our various companies, putting it into perspective with the results produced by professional associations (ISTF and AFINEF, 2023 and 2024) and to identify any tensions underlying their use (e.g. conflicts between human resources management and training departments).

We search for national surveys on the subject. We used the categorization made the surveys carried out by the ISTF and AFINEF (Edtech companies) : content production tools and content distribution tools. We also collected the tools used for adult education within our twelve professional organizations (private and public sectors). We have used a common presentation grid.

Survey analysis

Two major contradictions emerge from the results of the surveys studied by the ISTF. Firstly, the discrepancy between the development of distance learning (more than half of companies declaring that more than 50% of their employees follow a course incorporating digital learning) and an underdeveloped skills of a significant percentage of employees. This raise question of distance learning courses that require few skills.

Secondly, according to the ISTF survey, face-to-face training remains the most satisfactory training modality for completing training paths, and tutoring during the training action removes the obstacles to participation and foster success. This also highlights a misalignment

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with the emerging digital training offerings.

Analysis of tools selected by companies

While learning management systems (LMS) are specific, it constitutes the main management tools and determine the production and diffusion tools. While public-sector companies may use open-source software, in private-sector companies we observed a significant presence and widespread use of tools from the Microsoft Office suite. It has even led to divert software from their primary functions, as in the case of Teams, a videoconferencing tool that has gradually been enhanced with additional functions for distance learning.

Teams, used for distance learning and file storage.

The multitude of functions offered by "all-in-one" software can lead to a relationship of dependency. This leaves room for other tools for functionalities that are poorly covered by the Microsoft offering. For example Canva is cited by all companies, mainly for course design.

Training objectives can be divided as follows:

> Face-to-face training is mainly aiming the acquisition of skills and practices. For example, one of the companies we analyzed, create a fresco to raise awareness on societal issues, concerning various addictions, following the model of climate fresco (https://fresqueduclimat.org/) as well as the acquisition of good practices and gestures.Distance learning courses are more conceptual by nature. However, they can also provide training on a specific theme. And last but not least, e-learning is designed to provide knowledge on specific subjects.

We are still analyzing the data we have collected, particularly with regard to non-digital tools such as the frescoes.

References

ISTF (2023). Les chiffres 2023 du digital learning. 9e édition (Institut Supérieur des Technologies de la Formation)

ISTF (2024). Les chiffres 2023 du digital learning. 9e édition.

AFINEF (2023). Baromètre du digital learning 2023 (Association Française des Industriels du Numérique dans l'Education et la Formation)

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• Educational publishers' contributions and practices regarding compound subjects in Europe: a first survey and instructive case studies

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Research problems:

What is the role of educational publishers in the case of compound subjects ?

Which practices are followed in producing educational materials for compound subjects ?

Are there big differences between educational publishers in different European countries when it comes to compound subjects ? How can they be explained ?

Is there a way to help, by the example of best practices in certain countries, other European educational publishers to take a constructive role in developing compound subjects and compound subjects textbooks ?

Compound subjects are seen as innovative by many, but also as difficult, epistemically as well as didactically. In any case, they are a reality in many countries. An additional challenge are, in places, obviously missing close links between curriculum creation, teacher training, school practice, academic disciplines and educational publishing. In the context of the COMPOUNDS project (https://blogs.hu-berlin.de/compounds/; this project also covers curriculum and textbook content issues), funded 2022-2024 by the German Ministry for Education and Research (BMBF), we are focusing the educational material production side for compound subjects: what is the specific contribution of educational media publishers to compound subjects? We are a working group within COMPOUNDS, consisting of publishing studies researchers and educational publishing practicioners.

Since this is an area not covered by previous research specifically, we had to collect primary data concerning the role of educational publishers in the production of corresponding material – and (as it turned out) in the development and advancement of these subjects as such. The mindsets applied and production strategies followed (e.g. in the form of content reuse, particularly from textbooks for the corresponding base subjects) in these publishing houses were also

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of interest to us.

Using the evolving European (and beyond, including e.g. Canada / Quebec) network of COM-POUNDS, we were able to identify and address several educational publishers in different countries – and to systematically find out about what is interesting to us by distributing a questionnaire to them. The questions we asked included ones like "Did you as a publisher have a role in specifying these compound subjects or did you just react to the (new) curriculum's and/or teacher's demands ? Please specify." or "Do you systematically reuse content from previous (basic subject) textbooks for your compound subjects textbooks? Please specify."

The answers by the educational publishers we subjected to a systematic content analysis, with the aspects dwelled on above in the centre (role, content reuse, etc.). Moreover, we identified a number of interesting – i.e. typical as well as deviating (from the identified mainstream) – cases. Some of these cases we will present qualitatively in Paris, together with the quantitative results of the survey as a whole.

This research is meant to be a pilot for wider empirical research in the course of a large follow-up project. In short, the results of our research can be summarised as follows: 1) educational publishers have a more important role for compound subjects than could be systematically expected, since they e.g. respond to teachers' questions that are not answered by the curricula; they do that implicitly with the help of the content of their educational materials, but also explicitly with the help of seminars, advice and sales conversations, etc. 2) Since in many countries compound subjects networks (of authors, teacher trainers, etc.) do not exist, educational publishers rely on the networks they had built around the basic subjects; outright content reuse is only one possible form of that.

Requirements of Multimodal Reading Competence for Digital Textbooks on Climate Change in Germany

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Climate change learning materials are characterized by triple complexity, including factual complexity, ethical complexity, and linguistic complexity when presented in disciplinary, multimodal texts (Fuhlrott & Bordin, submitted 2024). These complexities pose challenges for students' reading competence, requiring appropriate didactic methods from teachers.

The research questions of this study are as follows:

- What are the specific reading competence requirements imposed by digital textbook chapters on climate change?

- How do the reading competence requirements of chapters on climate change in Germany's digital Grade 11 Geography textbooks differ from those of other chapters, such as endogenic forces?

The methodology employed in this research includes qualitative content analysis (Mayring, 2010) and quantitative data analysis methods using MAXQDA. The climate change chapters from three digital Grade 11 Geography textbooks in the German state of Nordrhein-Westfalen were selected for comparison (n=48 textbook pages). The analysis examined variates in the following categories and their correlations:

- The multimodality of the texts in the learning material, with a specific focus on the various text types presented.

- The requirements of the learning tasks given on the textbook page in regards to the requirements to select, organize, and integrate information from different text types.

- The amount and kind of instructional support given for the steps of the reading process in the phrasing of the tasks.

- The authenticity of the texts presented on climate change.

- The types of action verbs in learning tasks.

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*Speaker

In a second step, specific reading competence challenges enhanced by the digital medium (Jian, 2022; Wylie et al., 2018) were also examined in a content analysis of selected double pages.

Preliminary results indicate that the digital textbook pages on climate change are linguistically complex. Students need to possess text type-specific reading competences for a variety of text types, which can be clustered into linear, graphic, graphically structured, mathematical, and short texts. These text type-specific reading competences often require competences from several disciplinary literacies (e.g., mathematical competences to read graphs or geographical competences for maps). Furthermore, students also need multimodal reading competence as they are required to select, organize, and integrate information from different text types through the tasks presented, particularly in larger elective project tasks found in two of the three textbooks' climate change chapters.

Regarding authenticity, chapters on climate change tend to employ more didactically composed or modified texts compared to other topics. Most texts do not provide source attribution, limiting students' ability to assess the reliability of the information presented.

The digital medium significantly impacts the reading competence requirements, particularly in terms of the visibility of complex, multidimensional texts such as concept maps, which need to be integrated with information from other texts. Moreover, the digital format introduces a wider range of text types to be considered compared to traditional print versions of textbooks.

In the discussion of the results, it is suggested that students not only require a range of text type-specific reading competences but also multimodal reading competence to comprehend and engage with climate change topics. Research indicates that solely training reading strategies or simplifying texts is ineffective in improving reading comprehension outcomes (Dittmar et al., 2017). Consequently, the paper presentation concludes with a suggestion for a didactic, task-based method to support the development of multimodal reading competence, as well as a research design for a pre-post study to investigate the effectiveness of this method.

Keywords: Multimodal reading competence, digital textbooks, text complexity

Diversity in Norwegian Curriculum and Textbooks. Does the Curriculum for the 10-year Compulsory School Reflect Societal Change in Their Representations of Diversity?

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The paper forms an introduction to the international anthology, *Diversity in learning material. Interpretations of the thematization and representation of diversity in textbooks, learning material and educational practices.* The book is planned to be published in the IARTEM series at Peter Lang in 2025. The paper discusses the core questions that the book addresses on diversity and its role in teaching and learning materials as well as practices. While the book contains contributions from ten different countries, the paper will present an example from a Norwegian context to contextualize the core questions addressed in the Introduction and in the book as a whole.

The example from Norway illustrates how conceptualizations of diversity change from curriculum to textbooks and learning material and this interconnection changes over time. We compare different Norwegian curricula that have been introduced in the country over the last twenty years and analyse them in the context of societal change.Norwegian curricula have been modified and updated frequently in the last years. The current curriculum (LK20) was launched in 2020 (Kunnskapsdepartementet, 2019) and is a revision of the LK06 from 2006 (Utdanningsdirektoratet, 2013) , which in turn represented a quite radical revision of the previous one from 1994/97. In this paper we will give an overview of the evolution of Norwegian curricula over the years in regard to the thematization and representation of diversity interpreted in a broad sense and in light of the concept of intersectionality (Björklund & Lindqvist, 2016) and as a "vague concept" (Blikstad-Balas, 2014). We ask whether the curricula reflect the social transformation of the Norwegian society and in particular whether they include thematization and representation of diversity in different ways.

The specific aspect of diversity that we focus on here, is that of migrants, which means pupils with a migration experience either personally or through their parents. Their diversity consists in belonging to a minority community (i.e. background, culture, habits, religion different than the majority), and forhaving Norwegian as their second language. Since the immigration to Norway has increased considerably during the very last few years, the population has become much more diversified, plurilingual and pluricultural, we want to find out if and how the curriculum has implemented this transformation.

We test out our findings in the different curricula with an analysis of one textbook in Nor-

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wegian language and literature for the secondary school. We analyse the textbook in its original version of 2006 created for the LK06-curriculum, and its revision adapted to the new curriculum of 2020 (LK20).Our method in analysing the example of the Norwegian curriculum is text analysis using critical discourse analysis and rhetoric.

References

Björklund, J., & Lindqvist, U. (2016). *New Dimensions of Diversity in Nordic Culture and Society* (1st ed.). Cambridge Scholars Publishing.

Blikstad-Balas, M. (2014). Vague Concepts in the Educational Sciences: Implications for Researchers. *Scandinavian Journal of Educational Research*, *58*(5), 528–539.
https://doi.org/10.1080/00313831.2013.773558

Kunnskapsdepartementet (2019). Læreplan i norsk (NOR01-06). Fastsatt som forskrift. Læreplanverket for Kunnskapsløftet 2020. (Ministry of Education and Research (2019). Norwegian subject curriculum (NOR01-06))
Utdanningsdirektoratet (2013). Læreplan i norsk (NOR1-05). Læreplanverket for for Kunnskapsløftet 2006. (The Norwegian Directorate for Education and Training (2013). Norwegian subject curriculum (NOR1-05))

Keywords: Diversity, societal change, national curriculum, intersectionality, text analysis

The Evolution of Textbooks in the Last Decade: A Literature Review from an Inclusive Education Perspective

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Technological and sociological progress has driven a transformation in the way education is understood. Consequently, in the last decade, the educational world in particular, and society in general, has raised awareness of inclusion and a diverse approach to learners, directly influencing the design and development of materials used in the learning process. Textbooks have become, due to their historical presence in classrooms around the world, the teaching material par excellence, being not only an object that facilitates learning, but an authentic representation of the culture of a territory, of complex social situations and, of course, a tool for the transmission of values and counter-values that deeply permeate new generations in an implicit way (Munakata, 2016). Consequently, textbooks have been influenced by these changes in line with the changes in a heterogeneous and diverse society. Therefore, they have had to adapt to curricular changes, to rapid technological advances by changing the support and the way of showing the contents, and they have also had to expand their offer by becoming more accessible and varied in terms of the representation of how diverse human beings are by nature, paying special attention to those groups that have historically been excluded, such as people with some kind of functional diversity, women or belonging to the LGTBIQ+ group, people from different cultures and, of course, with different languages (Ayaz et al., 2016). Taking this into consideration and knowing that this is a recent change, to what extent have they been able to live up to this task, and has this issue been resolved with the change to technological support, or is it still a pending issue for publishers?
This paper presents a literature review that delves into the evolution of textbooks in education, with the inclusion paradigm as a central focus. The review was carried out in 2024 using the SCOPUS database. We worked on the basis of the Prism Method (Page et al., 2021), following its four phases (identification, screening, eligibility and inclusion). A search using this method yielded 49 open access results, 2 of which were discarded due to their unavailability on the web.

The results obtained reveal a growth in scientific production in this area during the year 2023 and a common language among them, which is English. The highest participation in this type of publications comes from Spain and the United Kingdom, with the Universitat de València and University College being the universities that stand out as the main researchers in this area.

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*Speaker

The content analysis has shown a series of categories in which the publications are grouped, with articles focusing on linguistic and cultural diversity being the most frequent, followed by those on the inclusion of specific content. Focusing on attention to diversity, only 7 address the subject in a broad sense, 4 from a gender perspective and another 4 studying functional diversity. Within the first category, the texts analysed focus on the representation of multiculturalism in the classroom, how linguistic diversity is dealt with in multilingual territories and the representation of certain communities that have been discriminated against by ethnicity, such as Africans. In the category of diversity in a broad sense, we include those studies in which textbooks are reviewed from a perspective of inclusion of different groups through an intersectional relationship of exclusionary situations. The texts that focus on the representation of women do so from the perspective of iconic representation, equality in the models and the language used. Surprisingly, one of the categories with the most results does not analyse attention to diversity, but rather the "inclusion" of certain specific contents, many of them focused on the environment, healthy habits, among others. The results show the need for future research on the representation of human diversity and the appropriateness of the format and content. Despite the interest of the results obtained, a possible limitation of the research is that it may be too narrowly focused on a single database. That is why we propose future comparative research using new academic databases, as well as extending the historical range of the search, which will allow us not only to know the state of the art in the field but also its evolution over time.

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Bibliographical references

Ayaz Naseem, M., Arshad-Ayaz, A. & Rodríguez Rodríguez, J. (2016). *Representation of mi-*

norities in textbooks. *International Comparative Perspectives.* International Association for Research on Textbooks and Educational Media (IARTEM), Santiago de Compostela, España.

Munakata, K. (2016). Livro didático como indício da cultura escolar. *História da Educação*, *20*, 119-138.

Page, M. J., McKenzie, J. E., Bossuyt, P. M., Boutron, I., Hoffmann, T. C., Mulrow, C. D., ... & Alonso-Fernández, S. (2021). Declaración PRISMA 2020: una guía actualizada para la publicación de revisiones sistemáticas. *Revista española de cardiología*, *74*(9), 790-799.

The appropriation of educational resources by 4th and 5th grade teachers: a constrained activity with more or less positive potential effects on student learning.

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In France, teachers are free to choose and design the teaching aids they offer their pupils in class (Choppin, 2005). They can select one or more textbooks or other resources (teacher blog entries, documents proposed by the institution, etc.) and decide whether or not to modify them. This presentation focuses on this out-of-class teacher work. More specifically, we ask: how do the CM1-CM2 teachers appropriate textbooks and other educational resources? What influences this appropriation ? Through these questions, we intend to provide a better understanding of the instrumental activity of teachers, while at the same time looking at what might, during this activity, lead to the fuelling or reduction of social learning inequalities.

Firstly, analysis of the responses to a questionnaire involving 511 CM teachers shows that two-thirds of them transform resources. As for the remaining third of teachers, 50% of them use a textbook as proposed by the publishers for their spelling lessons and 33% for their history lessons. The textbook, a tool "constructed with a certain epistemological coherence" (Margolinas & Wozniak, 2010, p. 244), is therefore rarely on the students' table, given that when it is used as is, it often takes the form of photocopies in the classroom.

Secondly, an analysis of 346 media - which some of the respondents sent in via the questionnaire - reveals that when appropriating resources, teachers act more on form/presentation than on content. This appropriation then has repercussions on the internal characteristics of the media. It reduces the semiotic and linguistic complexity of the resources (especially those offered by publishers), making it easier for all students to process the content. At the same time, however, it reduces the demands of the proposed activities. In this way, teachers' transformations have consequences for students' intellectual activities, and probably for their learning as well. So it's vital to understand more about what encourages teacher changes.

The field survey (16 sessions observed and 14 teacher interviews) reveals the logics and, above all, the constraints underlying teacher modifications. During the preparatory work, teachers decomplexify the resources by deleting elements or splitting the resource into several media in order to implement 3 logics:

- planning logic, as it is imperative to reduce the session and sequence time proposed by a resource,

- the logic behind the design and implementation of the learning situation. For example, during the first session, to let students build their own knowledge, teachers remove the lesson that is

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[*]Speaker

often visible in textbooks.

- logics linked to the school's material constraints. Textbooks are often obsolete, and the number of photocopies per teacher limited. Teachers therefore ensure that the content of the resource can be reproduced in black and white on an A4 sheet of paper, with a certain visual quality.
These three logics of instrumentalization lead to resource modifications that push teachers to give priority to the form of the support to the detriment of the didactic content. These logics are intertwined with institutional injunctions. Indeed, certain injunctions predominate in the profession : the permanent injunction to adapt (Stiegler, 2019), the injunction to get involved and the injunction to create/innovate (Tralongo, 2021). The government is careful not to explain why and, above all, how to comply with these injunctions (*ibid.*). To illustrate this, our interviewees explain that trainers (due, in particular, to the CRPE exams) and inspectors are pushing to criticize and modify resources, yet they lack the training to do so.

Subject-specific Use of Multimodality in Learning Materials

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Publication of poor reading results in international reading assessments such as PISA 2022 and PIRLS 2021 has once again brought attention to students' (lack of) reading competencies. Particularly noteworthy in this context is the finding that Danish students read fictional texts better than informative ones, and their reading proficiency in informative texts has significantly declined since 2016 (Fougt et al., 2023, p. 14). The informative texts are characterized by a high degree of multimodality.

Both analog and digital learning materials employ various representational forms. The purpose of this can be to create a motivating layout and to enhance the readability of texts for students (generic academic reading). However, these different representational forms are also used to communicate academically (disciplinary literacy). In school education, students must acquire the language and modes of thinking specific to each subject, and consequently, learn to read and understand the multimodal representations of academic texts in a subject-specific manner. However, research on multimodal subject-specific reading is currently underexplored.

The present project investigates:

How is multimodality used in a subject-specific manner in didactic learning materials for intermediate-level students in the subjects of Danish (L1), history, and religious studies?

Teaching in these three subjects in Denmark is characterized by students independently 'reading for learning'.

The project is part of a larger initiative that also examines how students read and utilize multimodal constructions in existing learning materials (including eye-tracking studies) and explores how new learning designs can support students' effective use of multimodal constructions, thereby increasing their learning outcomes. The overall project consists of two main phases: a descriptive phase, examining existing learning materials and students' current reading practices, and an intervention phase, investigating the outcomes of altered learning designs.

The subproject presented here examines three didactic learning materials for each of the three subjects through a qualitative document study with a descriptive aim. The unique possibilities for multimodal integration in digital learning materials, combined with the increasing use of digital materials in Danish primary schools, make them a relevant subject to explore. The materials were selected as they are geared towards the intermediate level and are part of a

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collection of 'widely used' units on a digital subject portal. Publisher-produced digital portals with didactic units covering the entire school curriculum are frequently utilized in the Danish primary school system. These portals are characterized by a consistent expression at the portal level across subjects and grades. By choosing to analyze units from different subjects but on the same subject portal, there is an opportunity to focus on the subject-specific use of multimodal constructions rather than the educational material producer's use of multimodal learning design. This allows for a distinction between generic ways of utilizing multimodality (at the portal level) and subject-specific ways of using multimodal constructions (at the unit level).

Theoretical grounding for the study is multimodality theory from a social semiotic perspective (Kress & van Leeuwen, 2021) and disciplinary literacy theory (Shanahan & Shanahan, 2012). Disciplinary literacy theory addresses how subject-specific goals are achieved through a subject-specific approach to reading, but the theory has thus far primarily focused on the reading of verbal-linguistic representational forms.

Learning material analyses are conducted with a specific focus on examining the multimodal constructions present in the units and what characterizes and potentially differentiates them within and between the three subjects. The multimodal constructions are characterized by various representational forms, such as visual, diagrammatic, or linguistic (Hansen, 2018). Additionally, the relationships between the elements of the multimodal constructions (van Leeuwen, 2005) are explored, and finally, how these multimodal constructions contribute to realizing the content, goals, and characteristics of each subject.

Results from the investigation of learning materials for intermediate-level Danish (L1), history, and religious studies will be presented and discussed at the conference.

References:

Fougt, S. S., Neubert, K., Kristensen, R. M., Gabrielsson, R. H., Molbæk, L., & Kjeldsen, C. C. (2023). *Danske elevers læsekompetence i 4. klasse: Resultater af PIRLS-undersøgelsen 2021.* Aarhus University Press. https://doi.org/10.2307/jj.3850481 (*Danish Fourth-Grade Students' Reading Competence: Results of the PIRLS 2021 Study*)

Hansen, T. I. (2018). Multimodalitet som didaktisk kategori. *Learning Tech, 4*(5), 60–85. https://doi.org/10.7146/lt.v4i5.111565 (Multimodality as a Didactic Category)

Kress, G. & Van Leeuwen, T. (2021). *Reading Images. The Grammar of Visual Design*, Third edition. Routledge

Shanahan, T., & Shanahan, C. (2012). What is disciplinary literacy and why does it matter? *Topics in Language Disorders, 32*(1), 7–18.
Van Leeuwen, T. (2005). *Introducing Social Semiotics.* Routledge

Keywords: multimodality, diciplinary literacy, learning materials

Exploring question types and features of mathematics textbooks in vocational senior high school

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According to the 2018 Curriculum Guidelines for 12-Year Basic Education in Mathematics for Vocational Senior High Schools in Taiwan, the educational objectives are broad and dynamic, focusing on developing students' mathematical competence and proficiency, enhancing their ability to use tools and technology effectively, and fostering robust problem-solving skills. This modern approach in vocational senior high school mathematics education is not limited to just understanding mathematical concepts and applying mathematical skills. It progressively moves towards equipping students with the ability to solve real-world and occupational problems. This is achieved by cultivating a deep and flexible understanding of mathematical principles and encouraging the adept application of mathematical tools. The curriculum is designed to bridge theoretical knowledge with practical application, aiming to prepare students for the diverse challenges they might encounter in their professional careers and everyday life, thereby making mathematics education more relevant, engaging, and applicable to various contexts.

Textbook is a necessary element in the implementation of curriculum reform, and its content symbolize the transformation of goals of the idealistic curriculum. The 12-Year Basic Education embodies a paradigm shift in teaching and learning of mathematics, from knowledge-centered learning to cultivating problem-solving in different contexts. The development of student's mathematics learning is not recommended to repeatedly practice similar problems (Gu, Huang, & Marton, 2004), but rather, the number of problems in different contexts should be increased to diversify the content of textbooks, thereby creating and shaping a learning environment conducive to higher-level understanding (Van del Heuvel-Paanhuizen, 1996). In different contexts, it is possible to stimulate and inspire student's flexible problem-solving strategies. There is a positive relationship between providing learning opportunities in diverse mathematical contexts and the academic achievement of students. How do textbooks demonstrate that offering a suitable learning environment to develop diverse problem-solving strategies is a one of the crucial components of curriculum reform. Therefore, it is necessary to explore and understand which contexts of questions are provided by textbooks to facilitate the development of students' problem-solving strategies.

The research, referring to PISA 2022 Mathematics Framework as theoretical foundation and analytical framework, explores the question types and characteristics of mathematics textbooks in vocational senior high school through content analysis. Question is the fundamental unit of composition in mathematics textbooks (Stein, Remillard, & Smith, 2007). The contexts involved in these questions were categorized into personal, social, occupational, scientific, and mathematical. We conducted a detailed categorization, comparison, and analysis of the questions found in 10 different versions of mathematics textbooks in vocational senior high school, systematically

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examining the content and structure of these educational materials to gain a comprehensive understanding of their approach and emphasis in teaching mathematics.

This research revealed three major findings. At first, in all the versions of the mathematics textbooks analyzed, an overwhelming majority, exceeding 89%, of the questions presented are deeply rooted in a mathematical context. This finding underscores a consistent and significant focus on mathematical scenarios and problem-solving within the framework of these textbooks, highlighting their dedication to emphasizing mathematical concepts and applications. The second observation is that, in nine of the textbook versions, the questions related to personal contexts ranked second in terms of frequency. In just one version of the textbook, the questions involving scientific contexts outnumbered those related to personal situations. The third finding is that in each version of the textbooks, questions related to personal, occupational, and scientific contexts are extremely scarce, with the vast majority of these questions accounting for less than 1% of the total. Moreover, there is one version of the textbook that completely lacks any questions pertaining to occupational contexts. Therefore, we suggest that textbooks should offer questions in a variety of contexts, enabling students to use mathematics to solve problems and enhance their flexible and diverse problem-solving strategies.

Gu, L., Huang, R., & Marton, F. (2004). Teaching with Variation: An effective way of mathematics teaching in China. In L. Fan, N. Y. Wong, J. Cai, & S. Li (Eds.), How Chinese learn mathematics: Perspectives from insiders (pp. 309-345). Singapore: World Scientific.

Ministry of Education. (2018). *Curriculum guidelines of 12-year basic education: Language Arts-Mandarin*. Taipei, Taiwan: Author.

Organization for Economic Co-operation and Development. (2023). *PISA 2022 Mathematics Framework: assessment and analytical framework*. Author.
https://www.oecd-ilibrary.org/docserver/7ea9ee19-en.pdf?
expires=1704117927&id=id&accname=guest&checksum=EDB9563E155337C0F060D951B1127BB8
Stein, M. K., Remillard, J., & Smith, M. S. (2007). How curriculum influences student learning. In F. Lester Jr. (Ed.), Second handbook of research on mathematics teaching and learning (pp. 319-369). Greenwich, CT: Information Age.
Van del Heuvel-Paanhuizen, M. (1996). Assessment and realistic mathematics. Utrecht, The Netherlands: Freudenthal Institute, University of Utrecht.

Challenges and opportunities for history-geography teachers in teaching and implementing competency-based learning for the "Touristic Guide" module, secondary education

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This paper contributes to the discourse on tourism education in Albania by examining the influence of the "Touristic Guide" module on student competency development. The study focuses on upper secondary education and aims to identify the challenges and advantages of this module in the context of tourism education in Albania.

The profession of a tourist guide has significantly contributed to the growth of the Albanian tourism sector, especially during a time when tourism has become a key component of the economy. In this context, the "Touristic Guide" module is viewed as an important tool for preparing a new generation of guides who will not only lead tourist groups skillfully but also promote the values of Albanian culture and nature. This module can serve as a foundational element for the initial education of future tourist guides.

Students begin acquiring the necessary knowledge and skills to lead tourist groups as early as in upper secondary education, using basic guiding techniques. This is emphasized in the professional "Touristic Guide" module, which is integrated into the upper secondary curriculum as an elective, providing students with an early opportunity to explore and develop their guiding abilities.

The module poses a challenge for geography and history teachers in the 10th-grade classes of upper secondary education in Albania. The same teachers teach both history and geography subjects, as well as the module on "Touristic Guide". The teaching approaches and content of history and geography of Albania can be seamlessly incorporated into this module. Teachers must ensure that the module's content aligns coherently with the upper secondary curriculum

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*Speaker

guidelines and offers a rich and effective learning experience for students. Crucial to this is their preparation for practical fieldwork and the selection of suitable learning materials.

A SWAT analysis and structured interviews with teachers implementing this module serve to identify challenges and opportunities for improvement. This analysis aims to uncover obstacles in achieving student outcomes, including finding and using learning materials, as well as integrating technology into teaching.

Through this study, the goal is to contribute to the enhancement of the "Touristic Guide" module in Albanian education, preparing the groundwork for more effective teaching and deepening students' skills in the field of tourist guiding. By doing so, students are expected to be well-prepared to play a key role in the development of tourism in Albania, contributing to a richer and more conscientious environment towards natural and cultural values.

Discourse Analysis on Textbooks – A Knowledge Overview

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Conference theme: methodology in research of learning resources, fostering critical thinking from textbooks and educational media

Discourse Analysis on Textbooks – A Knowledge Overview

Authors: Christoffer Dahl & Angerd Eilard

Keywords: *Discourse Analysis, Critical Studies, Education Science, Teacher Education*

The aim of this presentation is to discuss an ongoing study of how discourse analysis is being used as a theory and research method for analyzing textbooks. The study is a part of a larger project we have been working on for two years, which is a knowledge overview focusing on discourse analysis in educational science research in Sweden 2000–2022.

The need for textbook research has currently been highlighted in Sweden as a new goal has been introduced in teacher education programs as of this year of 2024, a goal that e.g. stipulates that students shall "demonstrate the ability to use and value textbooks". Discourse analysis can make visible how power relations, locally and globally, create inequalities and injustices, conflicts or false information, as shown by for instance Norman Fairclough (2015) and Teun van Dijk (2008). Therefore, discourse theory and methodology are relevant for critical analysis of representations in textbooks as well as for analysis of the actual use of textbooks in an educational context.

The material consists of Swedish theses, i.e. dissertations from Swedish higher education institutions, during the period 2000–2022. Thus, one criterion is that the research problem in the thesis must be anchored in educational sciences and discourse analysis must fill a central function overall. Methodologically, we used data bases containing most of the theses being produced in Sweden within educational research. We first read the abstracts of the theses found, when we sought on the term discourse analysis and selected relevant theses. Of the 294 selected theses, we identified 21 studies on textbook analysis. The research questions to our material are: How can the research questions be described – what is the focus? What discourse analytical methods and theories are used and what knowledge do they contribute to the field of textbook research?

Our analysis so far shows that the research field is dynamic and interdisciplinary including literary studies and pedagogics as well as mathematics, sociology, and studies in nursing/health care. Our analysis also shows that the research problems in our material concern different subjects and contexts from preschool to higher education, and theoretical as well as vocational studies, such as gender, race/ethnicity, technology, legitimations of literature, multimodality,

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religion, civics, history, music, physics, and the use of digital resources. Both macro, such as Foucauldian or critical discourse analyses (CDA), and micro analytical perspectives, such as discursive psychology or ethnomethodology/CA, are represented in these studies.

One finding so far is that discourse analytical textbook studies make visible the use of dominant discourses on certain subjects or didactics, that risks making education in certain subjects or contexts biased. Another finding is that textbook studies that focus on critical content or global conflicts, have a democratic potential that can help teachers discuss such issues in the classroom.

We hope that our knowledge overview gives an insight in how various discourse analytical textbook studies can contribute to developing students/pupils critical abilities, such as independent thinking and a norm-critical approach. Thus, the knowledge overview could inspire to a more critical pedagogy that is concerned with how discourses and power interact in textbooks in different ways and contexts, which will also broaden the theoretical and methodological skills of pupils/students.

References

Eilard, A. & Dahl, C. (2021 eds.) *Diskursanalys med utbildningsvetenskapliga perspektiv. (Discourse analyses with educational perspectives.)* Studentlitteratur.

Gee, J.P. (2014) *An Introduction to Discourse Analysis: Theory and Method.* Abingdon, Oxon: Routledge

Fairclough, N. (2015). Language and Power. Third Edition. Milton Park: Routledge van Dijk, T. A. (2008). Discourse and Power. Basingstoke: Palgrave Macmillan

Keywords: Discourse Analysis, Critical Studies, Education Science, Teacher Education

Enhancing Effectiveness in Teaching Climate Change Through ChatGPT Integration in Albania pre-university education

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Enhancing Effectiveness in Teaching Climate Change Through ChatGPT Integration in Albania pre-university education

Climate change education is a critical aspect of preparing the next generation to understand and address the challenges posed by environmental issues. This study proposes the integration of LLM (Large Language Model) such as ChatGPT prompts in pre-university teaching as a novel approach to enhance climate change education. The focus will be on geography teachers within the pre-university system, enabling them to effectively utilize ChatGPT prompts in the realm of physical geography, for climate knowledge and climate change issues, such as lesson planning, generating climate games, involving project based learning aspects, etc.The methodology involves a pre and post-test evaluation, providing guidelines for using ChatGPT prompts between the two phases. A group of 20 geography teachers are involved in the study. They teach geography subjects both in upper and lower secondary education. They teach about climate knowledge and climate change, especially in VII grade, X grades, and elected curricula "Climate Change", as part of physical geography, where this knowledge is provided. Even though this knowledge includes the main concepts for climate change, teachers focus their teaching based on the learner-centered approach with a competency-based focus. This approach has been implemented in Albania since 2014. Teachers have diverse work experience as educators and are well-acquainted with the geography curriculum, and the programs, required by the Ministry of Education and Science. Related to work experience they are grouped as: unclassified (30%), qualified (5%), specialist (40%), and higly skilled (25%). They feel comfortable with the geography textbooks and climate change curricula. They have various specializations in the field of teaching and learning processes.

During the pre-test phase, the knowledge and utilization of ChatGPT as an innovative tool for geography teaching, especially for climate change, are assessed. A set of questions are given to teachers. Then in the next step, LLM-ChatGPT prompts are introduced as a supplementary tool for geography teachers, and some guidelines on ChatGPT usage are provided. This information is shared online to the participants Emphasis was given to the method of writing prompts related to climate change. Furthermore, teachers are orientated towards integrating ChatGPT to generate lesson plans or parts of them. They are tasked to create prompts for creative, interactive, and engaging climate change games, with suggestions to incorporate elements

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of competition and collaboration to foster a positive learning environment, etc.They are asked to create instructions for self-assessment of students themselves, outlining how they should reflect on their climate-related knowledge, issues of climate change, and climate actions.

A post-test evaluation was conducted to understand the effectiveness of ChatGPT as an innovative and informative tool for geography teachers regarding knowledge about climate change and action. For this reason, a set of questions from the first phase was repeated in the second phase. The level of effectiveness in using ChatGPT, determined by the study, depending on work experiences, teachers' guiding, and the potential of digital and technical use or content-related aspects, constitutes important findings for expanding its effective use as an assisting tool in teachers' work. Data were collected using a structured questionnaire, mostly with a 5-level Likert scale. For statistical data analysis, it is utilized the SPSS software program. The Cronbach's Alpha result of 0.864 indicates a good level of reliability for the questionnaire variables. Study found that there were no relation between work experience (in year) as a teacher and the time spent on self-training in the use of technology. The study showed that 40% of teachers belonging to the "*unclassified*" category rated that they would use "*always*" ChatGPT for climate change and climate action topics, while 66.7% of teachers in the "*specialist*" category assessed that they would use this tool "*often*" in relation to this topic.Other statistical analyses include cross-tabulation and paired samples t-test. Teachers states that there are some problems in: a) structuring the questions. It is need to be as clear and specific as possible in what they are asking, b) suggest limiting of its use by students regarding task preparation, as it may influence students' creative work and critical thinking. c) problems with the reliability of the generated information, d) the generated information in the Albanian language was sometimes unclear, etc. Despite some challenges highlighted by teachers, such as structuring questions and concerns about reliability and clarity of generated information, the second phase revealed that Chat-GPT was perceived as "*always*" and "*often*" helpful in competence-based teaching approach and teaching climate knowledge content and action. These findings, along with others, underscore the potential of integrating technological innovations, such as ChatGPT, into educational practices as a supportive tool from teachers' perspectives.

How to deal with the values involved in argumentation? The treatment of argumentative texts in French textbooks (Grade 9)

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The official regulations guiding middle school education focus on the question of values, which cuts across all subject areas; in particular, literary education is supposed to make a decisive contribution to students' access to values (Ahr, 2017). At the same time, these same texts (in particular, Bulletin officiel spécial no11 du 26 Novembre 2015) consider argumentation to be an important skill targeted by the educational institution, particularly in the context of French lessons.

This dual concern, for values on the one hand and argumentation on the other, is at the heart of my contribution. By drawing on these two threads, and attempting to see where they intersect, I will seek to shed new light on middle-school French textbooks. I'll focus on grade 9 French textbooks: indeed, "a more skillful use" of argumentation is an explicit objective for the end of low secondary school, with a view to upper secondary school and the French Brevet exam, which offers a choice of reflective or inventive writing (Bulletin officiel no 30 du 26-7-2018). First, I propose to circumscribe the place given to argumentation in these textbooks, both in analysis and production. I will then seek to identify the way in which argumentative questioning is articulated with questions linked to values. Finally, I will propose a theoretical framing of argumentation (Plantin 2016; Jacquin & Micheli 2012) on the one hand, and of values in argumentation on the other (Guerrini 1999; Heinich 2017), which seems to me likely to further " secure " the approach to these two fields in middle school, and to guide the exploitation of the rich resources already present in the study texts present in these textbooks.

Ahr, S. (2017). La sélection 2016 des "lectures pour les collégiens". Quelles valeurs ? Quelles postures de lecture ? *Le Français aujourd'hui*(197), 37-50.

Guerrini, J.-C. (1999). Valorisation, valeurs et argumentation. Dans J.-C. Guerrini, & E. Majcherczak, *L'argumentation au pluriel. Polyphonie, valeurs, points de vue* (pp. 39-92). Lyon: PUL (série Travaux et documents).

Heinich, N. (2019). Définir la valeur d'un point de vue sociologique. *Recherches & Travaux*(94). doi:https://doi.org/10.4000/recherchestravaux

Jacquin, J., & Micheli, R. (2012). Entre texte et interaction : propositions méthodologiques pour une approche discursive de l'argumentation en sciences du langage. Dans Collectif, *SHS Web of Conferences vol.1, 3e Congrès Mondial de Linguistique Française* (pp. 599-611).

Plantin, C. (2016). *Dictionnaire de l'argumentation. Une introduction aux études d'argumentation.* Lyon: ENS Editions.

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Learning potential of multimodal and hypertextual components in history content of current e-textbooks for Czech primary and lower secondary schools

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Learning with textbooks faced many challenges during the coronavirus disease pandemic, such as low usage due to competition with a wide variety of online teaching materials (Silva & Sousa, 2020) and a lack of teachers' guidance on students' learning (Yan et al., 2021). The electronic version of textbooks might have become more essential since the pandemic. Therefore, the development of textbooks is expected to consider new approaches in digitalization and changes in user habits and learning perspectives (especially interaction with learning content and multimodal perception of information). However, the quality and effectiveness of this shift need further investigation. We aim to map current textbook development trends to find out to what extent the electronic versions of textbooks bring added value for learning in current face-to-face classrooms compared to printed textbooks. More specifically, we focus on textbook components typical only for the electronic environment and provide innovative presentation of learning content, termed as "content added-value resources". According to Roy et al. (2022), this category includes hyperlinks, videos, audios, interactive images, and interactive animations. In our adapted analysis framework, we examine these components through three main variables typical for e-textbooks: hypertextuality, multimodality, and interaction (see Roy et al., 2022). Our analysis of new e-textbooks aims to answer the following research questions:

1) What learning content is presented through the multimodal and hypertextual components of e-textbooks?

2) What learning potential of the multimodal and hypertextual components is offered in e-textbooks?

The analysis is conducted as a pilot study providing an illustrative comparison of the presentation of history content in e-textbooks for Czech primary and lower secondary schools. The selected history subject matter serves as a suitable example of various multimodal and hypertextual representations of learning content. It also enables a comparison across the entire compulsory education, as it is taught at both school levels. The sample consists of all multimodal and hypertextual components of approximately 15 e-textbooks that meet the following selection criteria:

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a) recently published e-textbooks (year of publication since 2020)

b) e-textbooks including multimodal and/or hypertextual components

c) e-textbooks available for Czech primary and lower secondary school levels

d) e-textbooks from different publishing houses.

The quantitative and qualitative content analysis of students' books and teachers' books is conducted with respect to the research questions, based on the criteria which will be categorized through an inductive coding procedure:

a) Type of hypertextuality (internal, external – Roy et al., 2022)

b) Type of multimodality (videos, animations, etc.)

c) Learning content (topic, context of the unit)

d) Task design, interaction with students (types of learning tasks for students – Siegel & Hensch, 2021)

e) Cognitive structuring of the learning tasks (cognitive load, gradation, differentiation, scaffolding – Fey & Neumann, 2013)

f) Instructional use and adaptation (methodical guidance for teachers on the use of the multimodal and hypertextual components, teaching aims, and competence focus – Siegel & Hensch, 2021).

The results will provide a quantitative summary of the frequency of the observed categories of multimodal and hypertextual components and a qualitative view based on selected examples from different e-textbooks. Preliminary results indicate that although various types of hypertexts and multimedia are present in e-textbooks, explicit guidance on their use is very limited. Further results will bring insights for reflecting on the pedagogical potential of e-textbooks focusing on the context of face-to-face teaching and stimulate discussion.

References:

Fey, C. C. & Neumann, D. (2013). Bildungsmediem Online – Kostenlos angebotene Lehrmittel asu dem Internet. In E. Matthes, S. Schütze, & W. Wiater (eds.), *Digitale Bildugsmedien im Unterricht* (pp. 55–73). Bad Heilbrunn: Verlag Julius Klinkhardt.

Roy, N., Boyer, P., Lebrun, M., & Samson, G. (2022). Descriptive Analysis of the E-Textbook Situation in Quebec. *Formation et profession, 30*(2), 1–17.

Siegel, S. T. & Hensch, I. (2021). Qualitätskriterien für Lehrvideos aus multidisziplinärer Perspektive: Ein systematisches Review. In E. Matthes, S. T. Siegel, & T. Heiland (2021), *Lehrvideos – das Bildungsmedium der Zukunft?* (pp. 254–266). Bad Heilbrunn: Verlag Julius Klinkhardt.

Silva, O. D. L. D., & Sousa, Á. (2020). Perception of Teachers and Students about Teach-

ing and Learning in the Period of Covid-19 Pandemic. In *13th International Conference of Education, Research and Innovation* (ICERI2020) (pp. 4832–4838). IATED Academy.

Yan, L., Whitelock-Wainwright, A., Guan, Q., Wen, G., Gašević, D., & Chen, G. (2021). Students' Experience of Online Learning During the COVID-19 Pandemic: A Province-wide Survey Study. *British Journal of Educational Technology, 52*(5), 2038–2057.

The Need for Educational Publishers to Distribute E-Textbooks to Secondary Schools in Ghana

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E-textbooks, also known as electronic textbooks, refer to digital versions of traditional printed textbooks that can be accessed using electronic devices such as tablets, laptops and smartphones. E-textbooks are the complete creation of a textbook in an electronic format that can be used by students in the same format. This study examines the transformative impact of technology on education and focuses specifically on the urgent need for educational publishers to distribute e-textbooks to secondary schools in Ghana. It addresses the challenges facing the Ghanaian secondary school system, such as limited access to up-to-date textbooks, while highlighting the potential of digital technology to bridge this gap. The main objective of this study is to investigate the effectiveness, cost-effectiveness and influencing factors associated with the introduction of e-textbooks in the Ghanaian secondary education system. By assessing the benefits and challenges of e-textbooks, this study not only aims to improve the education by assessing the benefits and challenges of e-textbooks, this study aims to inform not only educational publishers but also policymakers and stakeholders about the potential advantages of transitioning from traditional print textbooks to digital alternatives. The researcher employs the mixed-method approach where 254 students were made to complete a survey on the study including 11 teachers from the selected secondary schools and 12 educational publishers operating in Ghana were interviewed for the study. Data were analysed from the administered questionnaire and the interview conducted while the results of the questionnaire and interview were separated. The findings of this study indicate that e-textbooks offer long-term cost savings when compared to traditional print textbooks. Additionally, the research identifies several crucial factors that influence the adoption of e-textbooks in Ghanaian secondary schools, including digital infrastructure and teacher support. These findings underscore the importance of investing in digital technology and teacher training to ensure the successful implementation of e-textbooks. This research strongly recommends the adoption of e-textbooks in Ghanaian secondary schools as a viable and beneficial proposition. It also emphasizes the necessity of collaborative efforts between educational publishers and the Ghanaian government to facilitate the widespread distribution of e-textbooks.

Keywords: Textbook, Educational Publishers, E, Textbooks, Book Distribution, Educational technology

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KNOWLEDGE AND POWER IN THE PRODUCTION OF TEXTBOOKS: THE CONFLICT BETWEEN AUTHORIAL AND OFFICIAL VOICES

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This paper presents partial results of the doctoral research that had as one of its objectives to identify and discuss which elements of coercion were present in the narratives of Brazilian authors of scientific articles, dissertations, and theses published in the last 20 years whose main object of study was the authors of textbooks.

The narratives of coercion were compared and theoretically-methodologically based on the ideas presented in the work "The Microphysics of Power" by Michel Foucault (1998), mainly discussing the concepts of knowledge, power, and subject and the reflections presented in "The Intellectuals and Power" by the same philosopher. According to the research data, several points of tension were found between the authorial and official voices, such as: (1) the distance between the guidelines of the Public Notice of the National Textbook and Teaching Material Program (PNLD) and the proposals presented by publishers, comparing them to what actually occurs in textbooks; (2) the theses of silencing discourses in order to consider their implications for the production of what should or should not be inscribed in the constituent files of textbooks; (3) stereotypical images dealing with certain discourses about political-social themes; and (4) the war for the senses, which, according to Orlandi (2021), requires ways of relating to coercion, of practicing the plasticity of language, considering that it is in the materiality of the discourse that the possibility of reaching the real concrete of meaning resides. Therefore, these conflicts show that there is a system of power that stops, prohibits, and, often, invalidates the speech of textbook authors and their knowledge as intellectuals, and their role is not to act neutrally, but rather to place themselves as erudite and political professionals fighting against oppressive forms of power, giving meaning to what they write and act, as this subject is the object and instrument of his work in relation to knowledge, "truth", "conscience", and "speech". These approaches presented in the works analyzed lead to a brief epistemological analysis of the relations of knowledge and power, together with the production of knowledge. Foucault (1998) presents in such work that power is not expressed solely through repression, but also through the formation of theoretical and ideological assumptions that predominate in the most varied areas of society, such as what happens with the production of textbooks, and that the dominant class, represented here by official voices, will be able to convince and remain in power, which must be analyzed as something dynamic, that is, as something that circulates and only works in a chain, never acting alone, since there is always a transmission center – as power mechanisms exert very subtle controls, which were diagnosed by the authors of the 7 works mentioned.

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We conclude that this coercive movement of discourses creates insecurity among the authors, and the meanings that should be produced in didactic books and materials end up, systematically, being emptied, becoming disposable while, according to Orlandi (2007), these situations need to be negotiated – as coercive forces can also influence the composition of the files constituting these materials and can often limit the creative process of their authors.

References

FOUCAULT, Michel. (1998). **Microphysics of power.** Graal Editions.

ORLANDI, Eni Puccinelli. (2007). **The forms of silence:** In the movement of the senses. Unicamp Editor.

ORLANDI, Eni Puccinelli. (2021). **interpretation Volatility**: politics, imagination and fantasy. Abralin.Org 2 (1). 1-15. https://doi.org/10.25189/2675-4916.

The Role of Textbooks in Addressing the Demands of Teaching Practice and Teacher Training in Natural Sciences within the Context of the New Secondary School and the BNCC

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This paper presents some aspects of an ongoing research project, funded by CNPq, which explores the relationship between educational resources used in teaching Natural Sciences and the professional development of teachers in this field. The theme has gained significance with the implementation of the Brazilian New Secondary School from 2021 onwards, aligned with the National Common Curricular Base (BNCC), and other educational public policies that have reshaped the curriculum at this educational level. One of the changes was the provision of textbooks by areas of knowledge, with part of the previous contents of Physics, Chemistry, and Biology comprising the new textbook. As a result of this modification, the common content for all students was reduced to 40% of the previous workload, leading to a decrease in the length of textbooks. According to the current rules of the Brazilian National Textbook and Learning Material Program (PNLD 2021), Natural Sciences textbooks, to be used from 2022 to 2025, instead of disciplinary collections made up of three volumes, one for each secondary school grade, as was the case until then, they are now made up of six half-yearly independent volumes, whose contents of which do not follow the previous traditional sequence. In this scenario, assuming that textbooks allow for the retrieval of elements from the constitution of school subjects and their respective didactics and/or methodologies, the research problematic is delineated, aiming to discuss and analyze the contribution that these materials can make to the teaching-learning process and to the initial and continued training of teachers. With this scope, the research problem is posed: how do Natural Sciences textbooks distributed by PNLD 2021 engage with

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teachers' teaching practice and contribute to their professional development, from the teachers' perspective? To answer this, a descriptive exploratory research has been developed in three stages: i) documentary analysis of the current Brazilian educational public policy and of the Natural Sciences textbooks approved by PNLD 2021, whose results will serve as the basis for the elaboration of instruments for the second stage; ii) a case study involving secondary school teachers and coordinators of teaching degree courses, aiming to understand, through semi-structured interviews, the possibilities of reading and implementing the changes promoted by public policies, which will support the third stage; iii) a large-scale survey with a representative sample of secondary school teachers aiming to understand how PNLD learning materials have been present in their classroom work and in their training. Thus far, documents related to educational public policy have been analyzed, allowing for the highlighting of the pragmatic foundations of an education geared towards the fast insertion of young people into the job market, and aspects of an educational reform that began well articulated, involving curriculum, teaching materials, teacher training, and financing, but faced strong resistance, mainly from teachers. This resistance, along with the lack of guidance and adherence to schedules by the Ministry of Education, has delayed the implementation of actions for teacher training and the production of learning materials. The choice of textbooks that did not follow the traditional sequence of subjects, as was the case until then, also weakened the original proposal. Additionally, the three Natural Sciences collections textbooks approved in PNLD 2021 and most chosen by Brazilian teachers were evaluated. This ongoing evaluation is coding the types of texts, images, activities, and other didactic resources present in the textbooks and has shown that Physics, Chemistry, and Biology chapters appear balanced throughout the textbook. However, it is far from an interdisciplinary proposal. Regarding images, it is observed that the most chosen textbook shows a greater concern with ethnic-racial diversity and works with images more prominently than other collections. However, there is still a noticeable predominance of images with white people, men, and from the Southeast Region (the economically richest region of Brazil) in the textbooks, which still falls short of representing the Brazilian population.

Keywords: Teacher Training; Textbooks; Educational Reform; Public Education Policy; PNLD.

References

Brasil. Base Nacional Comum Curricular(BNCC). Ministério da Educação (MEC). Brasília, DF, 2017. http://portal.mec.gov.br/conselho-nacional-de-educacao/base-nacional-comum-curricular-bncc

Brasil. Lei nº. 13.415,de 16 de fevereiro de 2017. Dispõe sobre a reforma do ensino médio brasileiro, Brasília DF, 2017.
https://www.planalto.gov.br/ccivil 03/ ato2015-2018/2017/lei/l13415.htm

Keywords: Teacher Training, Textbooks, PNLD.

Researches on textbook and educational media conducted on the NPPD/UFPR: a review study (Brazil, 2000-2023)

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The project was structured to seek answers to the following questions: What is the impact of the contributions from Didactic Publications Research Center (*Núcleo de Pesquisa em Publicações Didáticas – NPPD*) in the field of educational media research in Brazil? How does this production dialogue with international production on the subject? The two main objectives of the research are: a) to analytically describe the set of studies carried out by the researchers at different levels of training, indicating thematic trends and methodological approaches used; b) to provide a synthesis of the contributions to the conceptual development of the field and to facing school issues related to textbooks and educational media. This presentation brings the partial results of the ongoing study that analyses an ensemble of researches on textbooks and educational media conducted by the Didactic Publications Research Center – *NPPD* from the Federal University of Paraná – UFPR (Southern Brazil), from 2000 to 2023. Evaluation studies in a variety of knowledge fields reveal that the last three decades brought a significant increase on the number of master and doctorate researches presented in Brazil about several school subjects in different school levels. This increase is related to the consolidation of the Brazilian National Program for Textbooks and Didactic Materials (*Programa Nacional do Livro e do Material Didático – PNLD*) that evaluates, purchase and distribute textbooks free of charge for public schools that join that program (it is open to any public school in the whole country). Due to its dimension, it is possible to state that the PNLD is an impact factor in the production of textbooks and didactic material in several aspects: graphic and visual organization; content; and teaching methodologies. Those aspects are previously defined in public notices and must be considered by authors and publishers. The strength and stability of the PNLD during several decades, particularly due to the active participation of Brazilian universities on the evaluation process, brought effects on the constitution of a significant "scientific field" related to the study of this theme, according to Bourdieu's (2004) sociological theory. In this sense the textbook becomes a "scientific object", different agents establish their academic trajectories and organize

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their research groups, disputing spaces of scientific production, financial resources and symbolic power on this scientific field. According to this theoretical perspective, the NPPD can be positioned as part of this movement of construction and strengthen of a particular academic field that takes textbooks as a "scientific object" in different theoretical perspectives and different scientific approaches. The researchers whose works are analyzed in this study represent a wide sample of knowledge fields, are issued from several different educational institutions and this multidisciplinary work resulted on an expressive and plural of undergraduate researches, master and doctoral degrees, as well as post-doctoral internships. In that way the research here presented brings the results of a revision study conducted in accordance to the Vosgerau & Romanowski (2014) classification, mapping the ensemble of researches in the form of a "state of knowledge". The empirical material of this overview included undergraduate researches, master thesis, doctoral dissertations and post-doctoral reports from 2000 to 2023. In the actual stage of the research the focus was concentrated on the titles, abstract, keywords and introductory chapters of the researches ensemble. Other relevant elements also have been analyzed, such as the authors and their original academic field. As a review study, one of the departure points is the use of the research classification proposed by Johnsen (2001) in his classical study, but also including new classification issued from historical, social and geographical particularities, such as the digital supports and regional specific situations (Brazil/Latin America). As results it is possible to point a) the protagonism of the NPPD as a relevant center for the scientific production on the theme of textbooks and didactic materials; b) a map of the prevailing methodological approaches elected by this wide group of researches; c) identification of tendency of future researches, including scientific gaps to be surpassed; d) the systematization of theoretical references that contribute to better understand the structure of this research field as well as the roles of its agents.

References

Bourdieu, P. (2004). *Os usos sociais da ciência: por uma sociologia clínica do campo científico.* (Les usages sociaux de la Science. Pour une sociologie clinique du champ scientifique). São Paulo: UNESP.

Johnsen, E.B. (2001). *Textbooks in the kaleidoscope.* Tønsberg: Høgskøle i Vestfold.
Vosgerau, D.S. R, Romanowski,J. P. (2014). Estudos de revisão: implicações conceituais e metodológicas(Review studies: conceptual and methodological implications). *Rev. Diálogo Educacional,* 14 (41), p. 165-189.

Keywords: PNLD Textbooks, Review Study, NPPD Research Production

NUMBERJACKS versus NUMBERBLOCKS: a comparison between two educational media for 4-5 year olds.

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During the last three decades there has been a growing volume of research into 3-6 years old children that investigates informal learning of numbers, shapes, space or time, at kindergarten or home, through multiple resources such as picturebooks or educational media, used by children alone or in interactions with parents caretakers or researchers (Björlund, van den Heuvel-Panhuizen, & Kullberg, 2020). The link with the cognitive dimension and mathematics knowledge development is crucial, considering that numerical and spatial-geometric aspects play an important role in children's cultural life. My research examines two of those home-environment resources, *Numberjacks* and *Numberblocks*, two well-known British educational children's television series, **focusing on elementary numbers**.

This proposition is original, according to the humanities and social science or scientific databases(1), where less than four articles mention *Numberjacks* ou *Numberblocks* in their study, mostly written by psychologists, except for the one written by Susan Edwards a philosopher and early childhood education researcher (Edwards, 2010). She offers a cultural historical reflection on contemporary society and the early childhood curriculum related to how digital media such as *Numberjacks* and other educational childhood programs influence language learning and the introduction to cultural and scientific knowledge. For my part, I am interested in the conceptions that govern the choice of disciplinary knowledge explored, the choice of narrative, and the modes of interaction *a priori* with young viewers.

My interest in *Numberjacks* and *Numberblocks* comes from my interest in studying the multiple uses and conceptions of numbers, in relationships between the life of numbers in society, in mathematical contexts, and in contexts of resources that are designed for children developing number cognition, but **out of school** (even if teachers use or could use them). A previous study of this type in the context of children's literature enabled me to highlight graphic games and language games with numbers that go far beyond their usual meanings, and place **the initiation of young children in an epistemological, social and cultural perspective** (Gobert, 2021).

My theoretical and methodological framework is the semiotic perspective developed by **François Conne, researcher in didactics of mathematics**, around experience/knowledge links (Conne, 2008), based on Peirce's semiotics. I use **'semiotic cuts'** to highlight the underlying conceptions of the authors of *Numberjacks* and *Numberblocks*: conceptions of the world of mathematical numbers, conceptions of its relationship to reality and society, and conceptions of the ways in which young children are introduced to and acquire such knowledge.

For this presentation, the investigation was based on the study of fifteen minutes of each series: the first episode of *Numberjacks* and the first three episodes of *Numberblocks*. This corpus was sufficient to identify radically different conceptions in this first study. Initial results show that

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the conception underlying *Numberblocks* is the same as the conception usually underlying school curricula (in France), and most didactic research on the teaching and learning of numbers in the early years of schooling: a single focus on the relationship between quantities and numbers with an analogy through actions on quantities and arithmetic writing. On the contrary, *Numberjacks'* authors propose a global approach to the world of numbers, its relationship with society, the social practices that serve as a reference, and the plurality of interpretations of numbers and their uses.

Numberjacks **challenge the usual curricular choices made by most school textbooks, educational resources, but also in usual topics in didactics research**. Scrutinizing *Numberjacks* and *Numberblocks* more deeply, in an epistemological, semiotic and societal approach, could highlight tensions and open or revive debates in didactics research or educational sciences about math education in early childhood.

References

Björklund, C., Van den Heuvel-Panhuizen, M., & Kullberg, A. (2020). Research on early childhood mathematics teaching and learning, *ZDM, special issue 52(4)*, 607-819. New York: Springer.

Conne F. (2008) L'expérience comme signe didactique indiciel, *Recherches en didactique des mathématiques, 28 (2)*, 219-264.

Edwards, S. (2010). Numberjacks are on their way! A Cultural Historical Reflection on Contemporary Society and the Early Childhood Curriculum. *Pedagogy, Culture and Society, 18(3)*, 261-272.

Gobert S. (2021) Nombres et littérature jeunesse : formes de narration et usages des nombres, *Strenae 19*.

(1) Consulted: Jstor, Eric, Cairn, Sociology Collection, Cyberlibris Scholar Vox and Web of Sciences (November 2023)

Keywords: numbers, semiotic cuts, educational media

Digital learning resources, AI and critical thinking in L1

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Digital learning resources and artificial intelligence (AI) has during the last years been increasingly discussed in a Swedish school context (cf. Klingberg, 2023; Nygren, 2023). The debate is very polarized between those who see huge risks and those who realize opportunities. Researchers have pointed out the importance to create new designs for learning and re-negotiated school subjects, especially in L1; Swedish as a school subject (Graeske, in print; Green & Erixon, 2020).

This paper presents results from a study where L1-teachers discuss how they use AI and Chat-GPT in L1-education in upper secondary school. The aim of the study is to investigate what opportunities and challenges teachers see with ChatGPT and how AI influencing their work, uses of textbooks and conceptions of the Swedish subject. In the study, which was conducted during 2023, 10 L1-teachers at three different secondary schools were interviewed. The material is analyzed by thematic content analysis (Braun & Clarke, 2021) and theories about teacher agency (Priestley et al., 2015).

The study shows that digital learning resources and AI effects L1 teachers' agency in many different aspects. Almost all teachers highlight their work to prevent cheating, but several teachers also highlight the possibilities, like quick individual feedback and ChatGPT as inspiration and a "study friend". Moreover, the teachers stress the importance to focus on critical thinking, compensatory learning via selected textbooks and ethical perspectives like relationship between humans and machines, social and materiality aspects which ultimately can affect subject conceptions.

References

Blikstad-Balas, M., Kornhall, P. & Nilsson, J.M. (2022). *Omstart för skolans digitalisering*. Natur och kultur.

Braun, V., & Clarke, V. (2021). Conceptual and design thinking for thematic analysis. *Qualitative Psychology (Washington, D.C.)* https://search.proquest.com/docview/2526313490

Graeske, C. (in print). School, skills and teacher agency. Upper secondary school teachers' use of digital teaching aids. Conference paper. *International Association for Research on Textbooks and Education Media, 16th IARTEM Conference*, Florence 6–8 april 2022.

Green, B. & Erixon, P-O. (2020). Understanding the (Post-)National L1 Subjects: Three Problematics. In B. Green & P-O Erixon (Eds.), Rethinking L1 in a Global Era. Understanding the (Post-)National L1 Subjects in New and Difficult Times, (pp. 259–282). Cham Springer.

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Klingberg, T. (2023). *Framtidens digitala lärande.* Natur och kultur.

Nygren, T. (2023). *AI i skolan: möjligheter och utmaningar i undervisningen.* Natur och kultur.

Priestley M, Biesta G, Robinson, S. (2015). Teacher agency. What is it and why does it matter? In *Changing Education from the Bottom Up.* London: Routledge.

Keywords: AI, Digital learning resources, L1, teachers, subject conceptions, teacher agency

Climate change, science education and performative teaching

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Introduction

This article describes a didactic sequence that addresses the teaching of climate change, seeking to promote the literacy process of high school students, with emphasis on how current effects of climate change and its future consequences will affect the planet. In addition, aspects of performative teaching are incorporated for the benefit of generating learning from the body (Taylor, 2011).

The didactic sequence includes seven classes, linked to the subject of Physics within the differentiated training of sciences, for students in 11thand 12th grades, according to the Chilean curriculum of Natural Sciences, specifically regarding the learning objective: "To analyze, based on current and historical scientific data, the phenomenon of global climate change, considering the observed patterns, their probable causes, current effects and possible future consequences on the Earth, natural systems and society" (MINEDUC, 2019, p.195).

Performative Teaching and Learning

There is a need to integrate learning strategies that consider the emotions and feelings of the students, for which it is pertinent to address a resource or approach linked to emotions in their relationship with the body. Performative teaching is used today to characterize all those actions related to bodily practices, so it can be translated as an execution or performance (Taylor, 2011). In this way, performance can also be present in science classes, through a didactic strategy that involves a disruptive action within the class, that escapes from normativity and that has the body as its main materiality.

Description of the didactic sequence

The sequence includes seven classes (90 minutes each). The first is called "Climate-Changing Natural Phenomena," which addresses concepts such as weather and climate, seasons, and the elements that characterize climate. The second one entitled, "The Greenhouse Effect" seeks to establish that the excess of Greenhouse Gases (GHG) is responsible for the increase in the average temperature of the planet, and then, in the third session called "Human factor and its relationship with climate change" to be able to reflect on the role of humanity in the increase of GHGs and motivate students to mobilize for Climate Change. In the fourth class of the sequence, which is called "Climate Change in Chile", the course is invited to demonstrate the

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impact of Climate Change in their territories, contrasting their experience with that of older and younger relatives.

It is from the fifth class where the sequence takes on an evaluative character, this is called "Reporters for Climate Change" and contemplates the audiovisual production of a report, in the elaboration of which the entire course participates forming commissions. Approaching the end of the design, in the sixth class called "Preparing for the Climate Change Fair" where the students are organized for the realization of a day that seeks to raise awareness and dissemination about Climate Change with the educational community, in which all the products of the previous classes will be exhibited and that has the participation of the students in a role of experts in Climate Change. In the last class, called "Climate Change Fair", he contemplates only the implementation of the fair.

Validation

For the validation of this sequence, the expert opinions of three in-service physics teachers, who have at least five years of teaching experience and who have taught physics in secondary education, were incorporated. With this objective, a Likert scale assessment survey was developed that contemplates different aspects and criteria to evaluate the activities, resources used and elaborated for the didactic sequence.

Projections

As a projection, given that this sequence was designed to be implemented during the Covid-19 pandemic (online classes), the possibility of adapting its design to in person (or hybrid) classes is raised, according to the current work system of schools. In addition, since this proposal addresses performative teaching only in the last classes, it could be nourished by being restructured from a performative approach that considers it a central and transversal element throughout the sequence. From the publication of the sixth report of the Intergovernmental Panel on Climate Change (IPCC), this sequence could incorporate an update of data, attributed to the causes, consequences, acts of mitigation or adaptation of this problem that are raised in it.

The wash back effect of the oral exam? A study of learning materials that are preparing for the exam

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The Danish elementary school is facing a reform of the current curricula and final exams. In a current plan from the government, it is pointed out, "that teaching to the test can stand in the way of a more varied teaching." (the government, 2023, p. 23), and from the government's side, experiments are being planned with new exam tests and practices. The final exam in L1 in the primary school was given 'high stake' status in Denmark as it became an entrance requirement for youth education programmes in 2015. Denmark is the only country in the Nordics that has final exams (Hovdhaugen et al, 2022).
We thus assume that the design of the tests has a great influence in L1 in secondary school - especially in ninth grade. The test in oracy constitutes half of the total of the final exam in L1. The washback effect it has on teaching is therefore assumed on the one hand to be significant, and on the other hand this is unexplored empirically. Hovdhaugen et al talk about a knowledge gap (Hovdhaugen et al, 2022, p.7). Smaller empirical studies, however, show that the teaching largely has the exam as its goal (Christensen et al., 2014) and that the teacher's didactic choices are closely linked to what the students are to be assessed on. It is therefore relevant to examine how teaching in L1 prepares for the final exam.

Research questions:
According to the learning materials that are preparing for the test, what characterizes oracy in L1? Below: Which criteria for assessment are aimed for and which understanding of oracy is expressed?

In this study, the learning materials used in the so-called test preparation teaching are examined. In L1, the test preparation teaching is supported by didactic learning materials, which have been produced with the aim of developing the students' competences within the main areas that are tested in, this will e.g. state the student's competences in arranging his presentation, using clear and understandable language, as well as the student's competences in conversing about an academic subject.

The study is carried out as a document analysis of six didactic analogue and digital learning materials. The study also includes a digital learning material developed by the National Board for Education and Quality under the Ministry of Education, which teachers and students are encouraged to use.

The analyses of the learning materials are carried out as document studies in order to map and analyze which oral competences these learning materials aim to develop, as well as what explicit and implicit view of oracy these learning materials represent. As an analytical frame-

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work, *the Oracy Triangle* is used as a generic model that shows the various elements of an oral text (Carlsen & Skov, 2022). The survey does not say anything about what actually happens in the class room, but points to the intended use of the learning material.

Theoretically, an oracy didactic perspective is applied to the learning materials. The starting point is national and international research as it that takes place within the research field of "oracy" and "dialogic teaching" (e.g. Mercer, 2000). There is broad agreement that interaction and dialogue support students' professional learning as a means of gaining knowledge and understanding.

The overall purpose of this study is to clarify and in the long term improve teachers' conditions for the ongoing organization of oral teaching and to make valid assessments of students' oral competences. Results of the learning material analyses are presented and discussed at the conference in the light of this.

References.

Carlsen, D., & Skov, L. I. (2022). Mundtlighedstrekanten: et didaktisk redskab. I L. I. Skov (red.), *Meget mere mundtlighed* (s. 39-45). Akademisk Forlag.

Christensen, T.S., Elf, N.F., Krogh, E. (2014). Skrivekulturer i folkeskolens niende klasse. Odense: Syddansk Universitet

Hovdhaugen, E.; Flobakk-Sitter, F.; Wollscheid, S.; Fossum L.W. & Korseberg, L. (2022). *Kartlegging av nordisk forskning på eksamen.* NIFU-rapport (18). Nordisk institutt for studier av innovasjon, forskning og utdanning NIFU

Mercer, N. (2000). *Words and Minds: How We Use Language to Think Together.* Routledge.

Regeringen. (2023). Forberedt på fremtiden II. Frihed og fordybelse - et kvalitetsprogram for folkeskolen. https://www.uvm.dk/-/media/filer/uvm/aktuelt/pdf23/okt/231011-forberedt-pa%CC%8A-fremtiden2-web.pdf

Keywords: learning material analysis, oracy, L1

Writing and action in textbooks for teaching Portuguese language: the role of major publishers in the crisis of high school education

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Research question: This paper is part of an ongoing doctoral thesis dedicated to the study of Portuguese language textbooks for high school and the publishers that produce them. I pay special attention on language concepts and representations of teaching writing present in these books. In this paper, I pose the following research question: Is it possible that, through the representation of teaching writing in school exercises, publishers reveal certain expectations about the social purpose of high school education in Brazil, given their political and commercial conditions? (Chervel, 1988). **Framework**: This paper, as well as the thesis from which it is derived, aligns with applied linguistics. Within this field, it draws close to discursive approaches of French tradition. The distinctive feature of this framework is to recognize socially and historically determined meanings within language forms (Foucault, 1969; Pêcheux, 1975). This theoretical framework also calls for interdisciplinary relations with history, particularly the branch dedicated to the study of writings and the actions they perform (Carel & Ribard, 2022). **Sample and method**: In the ongoing thesis, the *material* consists of 10 pairs of Portuguese language textbooks from two Brazilian publishers, *Companhia Editora Nacional* (1925-1980) and *Abril/Somos Educação* (2004-2018). These books were their biggest editorial successes, fact determined through analysis of internal documents of the publishers (when available) and Brazilian policies on acquisition and distribution of textbooks. In this paper, I explore the book *Literatura e Linguagem* by Heitor Megale and Marilena Matusoka, published in 1975 by *Companhia Editora Nacional*. The *analysis method* involves systematizing all writing exercises present in the book and analyzing the explicit and implicit actions they perform. It is an indicial analysis method that, although involving formal elements, is not characterized by repeatability. On the contrary, it is distinguished by the investigation of singular clues that allow observation of a particular discursive functioning. **Partial results**: *Literatura e linguagem* presents 13 exercises explicitly and exclusively dedicated to writing, distinguished from the large number of exercises in the book. The abundant presence of exercises signals an attempt by the publisher to adapt to expectations of a new type of textbook and maintain its leadership position in the school market. The writing exercises in question exhibit the following characteristics: (i) imperative tone; (ii) organization in the form of a script; (iii) explicit reference to grammatical and literary themes presented in the chapters; (iv) solicitation of the use of specific language forms; (v) contextualization of writing. These characteristics suggest once again an attempt to assimilate dominant trends in the Portuguese language textbook market by *Nacional*. On one hand, this stance suggests its weakening as a company and as a political actor. On the other hand, it reflects some expectations about the purpose of high school education, only partially consistent with current school programs: (i) procedural orientation; (ii) professional, rather than university, purpose; and (iii) uncertainty between literary tradition and scientific tradition.

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*Speaker

Carel, M.; Ribard, D. (2022). Gestes et actions avec les mots. **Linguistique de l'écriture**, n. 3, p. 331-354.

Chervel, A. (1988). L'histoire des disciplines scolaires. Réflexions sur un domaine de recherche. **Histoire de l'éducation**, vol. 38, pp. 59-119.

Foucault, M. (1969). **L'archeologie du savoir**. Paris: Gallimard.
Pêcheux, M. (1975). **Les vérités de la Palice** : linguistique, sémantique, philosophie. Paris: La découverte.

Getting Entangled in Literary Concepts: Short Stories for Icelandic Secondary School and their Paratexts

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Modern short stories have played a key role in literature education in Icelandic upper secondary schools for the past half century or so. During this time, several anthologies of short stories intended for teachers and students in upper secondary schools have been published. These anthologies have undoubtedly contributed to the shaping of the Icelandic literary canon, but they are also connected to the history of literary theory and criticism in Icelandic culture and education. This lecture will examine the paratexts (such as prefaces, epilogues, annotations, author portraits and student assignments) of these anthologies of short stories and explore the literary concepts that are presented, both those specifically related to short stories and those associated with literary theory and criticism in general.

The analysis will be based on an examination of the paratexts of six anthologies of short stories published between 1979 and 2020, along with the accompanying teaching guidelines. Additional data underpinning the research includes interviews with teachers and students conducted in connection with a study on the teaching of Icelandic in primary and secondary schools in 2018, as well as recent interviews with teachers conducted in the last year.

The aim of the paper is twofold: firstly, to investigate whether the use of terminology and analytical methods in the teaching materials align with general developments in Icelandic and international literary criticism and pedagogy during the specified period; secondly, to inquire into the role of the literary theoretical approach apparent in the teaching materials on the teaching of literature as manifested in interviews with teachers.

Preliminary results show that the paratexts of these anthologies, in particular those that are aimed at students, such as assignments with individual stories, have stagnated and have not adapted to the trends of literary criticism as they have evolved from the 1970's to the present day.

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Consultation of Pedagogical Resources and Success in Distance Education

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Consultation of Pedagogical Resources and Success in Distance Education

How can we characterize success in distance education and the utilization of documentary resources? Is frequent course consultation a source of success? Are there study methods with documents that promote success?

To outline responses to these questions, an analysis of quantitative data from OpenClassrooms was conducted. OpenClassrooms is a French online education company that offers exclusively online paid courses. Students can enroll at any time and progress at their own pace. Learning is individualized. OpenClassrooms also distinguishes itself from ordinary distance education as it involve several hundred students concurrently. Ultimately, these courses lead to a diploma. To succeed in OpenClassrooms courses, it is necessary to complete a certain number of projects. For each project, video courses are accessible in an open-access catalog and serve as resources for task completion. Mentors assist students in project completion. Once a project is finished, a defense is organized with a jury. Projects must be completed sequentially.

Since autumn 2020, OpenClassrooms has collaborated with us to study student dropout rates in their courses. The overarching goal was to produce indicators and insights on ways to mitigate dropout rates in online courses offered by OpenClassrooms. To produce a dynamic visualization of student flows and understand their trajectories in the course, a specific dataset was generated. For the course titled "Pedagogical Responsible Engineer," eight data extractions were performed from January to July 2023. During the January extraction, 315 students were involved, and 560 for the July last extraction. This enabled us to conduct a data analysis characterizing student pathways and evolution in the course. Three databases were produced for each extraction. One specifically relates to this research, containing 8 variables describing students' usage of courses (courses consulted, number of chapters...) and 2622 rows indicating course consultations for the 560 July students.

To ascertain if a student is succeeding in the distance education program, we calculated an indicator of evolution speed. Since students are free to progress at their own pace and must complete eight projects sequentially, it is possible to distinguish them by evaluating their project completion speed. This allows us to differentiate successful students and cross-reference this variable with the consulted resources. Thus, we can infer the influence of resource consultation on course success.

Three-quarters of the students in the database are female. Median and mean ages are around 39 years old, two-thirds of the individuals present in the database are job seekers, and approximately two-thirds hold a bachelor's or master's degree. On average, students consult 5 courses. Half of the courses are consulted for less than 30% of their content, which corresponds to an average of 4 chapters. Students have access to the entire course catalog, meaning all courses

from all programs, but unsurprisingly, the 12 most consulted courses are those dedicated to the program. As students approach the end of the program, they consult approximately 35 course materials at most. This suggests that excessive course consultation indicates difficulties. In other words, successful students who reach the end of the program have not consulted the courses more than 35 times.

References

Atif, A., Richards, D., Liu, D., Bilgin, A.A., 2020. Perceived benefits and barriers of a prototype early alert system to detect engagement and support 'at-risk' students: The teacher perspective. Computers & Education 156, 103954. https://doi.org/10.1016/j.compedu.2020.103954

Chibaya, C., Whata, A., Madzima, K., Rudolph, G., Verkijika, S., Makhoere, L., Mosia, M., 2022. A scoping review of the "at-risk" student literature in higher education. https://doi.org/10.1101/2022.07.06.499019

Kuzilek, J., Hlosta, M., Herrmannova, D., Zdrahal, Z., Vaclavek, J., Wolff, A., 2015. OU Analyse: analysing at-risk students at The Open University. Learning Analytics Review LAK15-1, 1–16.

Wolff, A., Zdrahal, Z., Nikolov, A., Pantucek, M., 2013. Improving retention: predicting at-risk students by analysing clicking behaviour in a virtual learning environment, in: Proceedings of the Third International Conference on Learning Analytics and Knowledge, LAK '13. Association for Computing Machinery, New York, NY, USA, pp. 145–149. https://doi.org/10.1145/2460296.2460324

Zhang, L., Rangwala, H., 2018. Early Identification of At-Risk Students Using Iterative Logistic Regression, in: Penstein Rosé, C., Martínez-Maldonado, R., Hoppe, H.U., Luckin, R., Mavrikis, M., Porayska-Pomsta, K., McLaren, B., du Boulay, B. (Eds.), Artificial Intelligence in Education, Lecture Notes in Computer Science. Springer International Publishing, Cham, pp. 613–626. https://doi.org/10.1007/978-3-319-93843-1_45

Current practices in the use of etextbooks and digital resources in Australia: A Case Study

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RESEARCH PROBLEM

Textbooks have been used in education throughout the ages to integrate discipline knowledge and develop students' learning outcomes. Textbooks traditionally offered structure of the content and acted as an organizer for subjects (Knight, 2015; Knight & Galletly, 2021), described by Bruillard (2021) as the main instrument used in schools. Students have been encouraged to use these textbooks as authoritative sources to develop an understanding of the principles relevant to a discipline (Knight & Horsley, 2013).

The 21st century has seen a marked shift in the potential use of digital technology, characterized by an era of a shift to openness to access information. Today students can use learning tools to network with an overwhelming amount of information whereby they determine the relevance of information to the task at hand, make connections, and use their personal agency to locate, evaluate and create information (Fasso, Knight, & Knight, 2015).

This presentation reports the results of an investigation into secondary teachers' use of etextbooks and digital resources in the digital age in 2024. The research explores teachers' experiences and preferences on the use of etextbooks and digital resources in their classrooms, types of electronic devices used, selection criteria of etextbooks, adaptations necessary, central uses, useful features, impacts on student learning outcomes and student engagement, and challenges encountered in incorporating electronic textbooks into their practice.

METHODOLOGY

This pilot study uses a methodological frame of interpretative ethnography. The data gathering will be completed by exploratory interviews with secondary discipline teachers who are directly responsible for the provision of teaching and learning resources to support student development. The questions for the interviews were generated from the literature to elicit aspects about the resources used to support their teaching. Individual responses will be aggregated, analysed and presented as themes emerging from the data.

PRELIMINARY RESULTS

There are no preliminary results yet as the research is in progress being conducted from January to April, 2024. Very early and preliminary findings suggest the use of second generation etextbooks is common as a result of the need to cement declarative knowledge of the discipline

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REFERENCES

Bruillard, E. (2021). Textbooks and educational resources: overview of contemporary research. *IARTEM e-journal*, 13(1).

Fasso, W., Knight, B.A. & Knight, C. (2015). Development of individual agency within a collaborative, creative learning community. In M. Khosrow-Pour (Ed), *Encyclopedia of Information Science and Technology, Third Edition* (pp 7519-7528). IGI Global Press, Hershey, PA.

Knight, B.A. (2015). "Teachers' use of textbooks in the digital age". *Cogent Education*, 2(1),

10pp. DOI: 10.1080/2331186X.2015.1015812

Knight, B.A. & Galletly, S. (2021). The shifting landscape of text and how it is comprehended. In P. Bagoly-Simo & Z. Sikorova. *Textbooks and Educational Media: Perspectives from Subject Education* (pp. 47-58). Springer: New York

Knight, B.A. & Horsley, M. (2013). "The ecology of change and continuity in the use of textbooks in higher education". *Text,* 23 (6), October, 13pp

http://www.textjournal.com.au/speciss/issue23/content.htm

Promoting Critical Thinking in Tertiary Education Students through Teaching and Learning Resources with a Focus on Textual Materials in the Bachelor of Education

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The research builds upon a prior study conducted by SGS (The Student Grant Competition) in 2022, and is part of the dissertation, which delved into the distinctive features of teaching and learning resources. This investigation specifically explored how the resources could be implemented in the curriculum, considering the learning strategies employed by tertiary education students and the development of critical thinking skills. The focus was on materials utilized in pedagogical subjects, aiming to identify elements that could prompt students to activate their critical thinking within a given resource. The findings from the initial project highlighted the necessity for a more in-depth examination of the dynamics involved in learning from text, the learning strategies employed by tertiary students, and how students actively engage with critical thinking elements within the learning process.

The objective of the current research is to pinpoint the characteristics exhibited by texts tailored for tertiary students in education courses. The research seeks to articulate the potential these texts hold for fostering critical thinking. This potential will be further explored using an eye-tracking device to set students' strategies for learning from specific texts incorporating critical thinking elements. The investigation aims to determine whether and how these strategies align with a constructivist approach to learning. Attention will be devoted to the structural components of both visual and textual aspects of selected instructional resources, particularly focusing on textbooks and materials.

Problem question and project objectives

The main research question deals with the characteristics of the instructional texts designed for tertiary level students in education courses, what they exhibit and what potential they provide for promoting student's critical thinking.

Other specific questions are as follows:

1) Which instructional resources are considered as essential study texts in education-oriented undergraduate courses with a focus on education?

2) What is the didactic structure of the components (visual and textual) in the core study literature of the pedagogically-oriented courses in an education-focused undergraduate program?

3) Do the analysed educational resources provide potential in the form of developing students' critical thinking skills in their learning from text?

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4) What strategies do students in undergraduate education-focused courses use in learning from pedagogical texts?

Expected outcomes and preliminary results

Preliminary results indicate some interesting facts about what materials students learn from, what they strategies they use and whether they are familiar with the concept of critical thinking. However, the potential of learning materials for the development of critical thinking needs to be more deeply identified.

This will be followed by final report with results and recommendations for academia and the development of teaching materials with a detailed analysis of the characteristics of educational texts.

We would like to identify the potential of learning materials for developing critical thinking skills and recommend optimizing the didactic structure and promoting strategies to foster critical thinking in education students.

Methods

The research methods will involve didactic and content analysis of the texts. In-depth semi-structured interviews with students will be conducted, followed by an eye-tracking survey to gather additional insights from the respondents. The project aspires to offer profound insights into the role of critical thinking in the education of future teachers and aims to contribute to the enhancement of the quality of course materials.

References

Bezanilla, M.J., Nogueira, D.F., Manuel Poblete, M., Galindo-Domínguez. H. (2019). *Methodologies for teaching-learning critical thinking in higher education: The teacher's view.* Thinking Skills and Creativity, vol 33, 100584.
https://www.sciencedirect.com/science/article/pii/S1871187119300380
Horsley, M., Knight, B., & Huntly, H. (2010). *The role of textbooks and other teaching and learning resources in higher education in Australia: Change and continuity in supporting learning.* IARTEM E-Journal, 3(2), 43–61. https://doi.org/10.21344/iartem.v3i2.787

Huber, C. R., & Kuncel, N. R. (2016*). Does College Teach Critical Thinking? A Meta-Analysis.* Review of Educational Research, *86*(2), 431-468. https://doi.org/10.3102/0034654315605917

Richardson, John T. E. (2005). *Students' Approaches to Learning and Teachers' Approaches to Teaching in Higher Education.* An International Journal of Experimental Educational Psychology*,* vol 25 (6), 673-680. https://www.tandfonline.com/doi/full/10.1080/01443410500344720

Multiperspectivity in (post)colonial textbook narratives: a comparison of Indonesian and Dutch history textbooks

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Research problem/research question:

Who were the wives of Dutch colonist Michiel de Ruyter? Which Indonesian women played important roles in the struggle for independency? Small chance that high school students in Indonesia or the Netherlands can answer these questions elaborately based on their history textbooks. In recent years, the lack of multiperspectivity, particularly in subaltern, such as (formerly) colonized and female voices, in history textbooks has become more urgent, since current-day textbooks are increasingly expected to foster critical historical and postcolonial thinking (Kropman, Drie & Boxtel, 2022). The present project therefore questioned: what reference knowledge about Dutch-Indonesian colonial histories is present in history textbooks; to what degree is it characterized by multiperspectivity; and has it evolved over time and across continents? Though postcolonial textbook research is an empirically driven field, there are few diachronic studies tracking changes in intersectional representations of ethnic and gender diversity over time, comparing Asian and European contexts (Wasserman, 2018; Niehaus, 2018).

Methodology and relevance towards the question/description of data (analysis):

To address our research questions, we examined how Indonesian and Dutch history textbooks represent agents in narratives on colonialism. We selected textbook chapters on Dutch-Indonesian colonial history, sampled from the *Leibniz Institute for Educational Media* textbook collections. This resulted in eight Dutch and eight Indonesian chapters published from 1950-2020, with roughly one textbook per decade per country. We performed critical discourse analysis (Baxter, 2008) on the selected chapters, focusing on representations of A. events and developments, B. colored and white wo/men in texts and images and C. comparing whether these differed across time and between Indonesian and Dutch textbooks. Moreover, we analyzed to what degree the textbooks contained markers of Asia- or Eurocentrism versus *new imperialism* (Nieuwenhuyse & Pires Valentim, 2018).

Results:

Results reveal representations of patriarchal Eurocentrism in both Indonesian, and to a larger degree, Dutch textbooks. Both Indonesian and Dutch textbooks featured white men in positions with political and financial power, whereas few men of color with such power appeared, but many in roles with lower status. In both cases, white women were hardly represented, while Indonesian textbooks featured women of color as independence fighters. Whereas some more recent Indonesian chapters contained Asiacentric discourse, especially older textbooks contained

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similar Eurocentric discourse as in Dutch textbooks. We present explanations for these findings stemming from academic historiography and broader societal movements and suggest ways forward to shape critical thinking in inclusive history education in both national contexts.

References:

- Baxter, Judith (2008) Discourse-analytic approaches to text and talk. In L. Litosseliti (Ed.) *Research Methods in Linguistics* 117-137. London: Bloomsbury.
- Kropman, M., Drie, J. van, Boxtel, C. van (2022). The influence of multiperspectivity in history texts on students' representation of a historical event. *European Journal of Psychology of Education*, 38, 1295-1315.
- Niehaus, I. (2018). How diverse are our textbooks? Research findings in international perspective. In E. Fuchs, A. Bock (Eds.), *The Palgrave handbook of textbook studies* (pp. 141-155), Palgrave MacMillan US.
- Nieuwenhuyse, K. van, Pires Valentim, J. (Ed.) (2018). *The colonial past in history textbooks – Historical and social psychological perspectives.* Charlotte: Information Age Publishing Inc.
- Wasserman, J. (2018). Perspectives on representations of colonial pasts through textbook analysis – Not quite a decolonial turn. In K. van Nieuwenhuyse, Pires Valentim, J. (Ed.), *The colonial past in history textbooks – Historical and social psychological perspectives* (pp. 261-176), Charlotte: Information Age Publishing Inc.

Navigating the Intersection - The Integration of Technical Proficiency and Audiovisual Media Literacy in Critical Teacher Education

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This abstract, resulting from my ongoing doctoral research entitled "Technical dimension and skills acquired in digital environments: audiovisual media literacy for critical teacher training", investigates the nuanced exploration of establishing parameters for critical-reflective teacher education in audiovisual and media domain seeking for a literacy in digital environments. The central research that guides this study is structured as follows: 'Can parameters be effectively established for critical-reflective teacher training that not only transmits audiovisual media literacy in digital environments, but also promotes deep understanding and critical engagement with these technological landscapes?' In approaching this research problem, a qualitative approach is used, combining documentary analysis and the Action Research method.

The study unfolds in the educational scenario of public schools in the state of Paraná, Brazil, focusing on teachers of Arts, Human Sciences, Computational Thinking and Literature responsible for the 8th grade of elementary school and/or 1st and 2nd years of high school, that is, students between 12 and 16 years old. These educators become participants in a purposefully designed short-term online course spanning four sessions, where various technology-mediated teaching platforms such as Padlet, Canva, Prezi, Instagram (emphasizing the development of audiovisual materials) and ChatGPT (for a initial exposure to generative artificial intelligence) are actively explored.

The three-pronged analytical process begins with a meticulous description of the data generated from pre- and post-course questionnaires administered to participating teachers. Subsequently, theoretical articulations are intertwined, connecting existing parameters with unexplored needs that emerge from the dynamic interaction between technology, education and critical reflection. This theoretical integration is fundamental to contextualize the results in the broader panorama of educational theory and practice.

The critical interpretation phase of the analysis is inserted into the daily fabric of Brazilian school life, aiming to assist in the emancipation of participants regarding the use of digital technologies in an educational environment. In essence, this phase seeks to uncover how acquired technical proficiency and audiovisual media literacy can be meaningfully integrated into the intricate tapestry of the Brazilian educational system or, further, any educational system in the world.

The theoretical basis of this investigation is based on key concepts such as ubiquitous pedagogy (Santaella, 2013), perspectives on literacy (Soares, 2009), critical reflection on audiovisuals (Ferrés, 2007) and the media literacy in the field of teacher training (Wilson et al., 2013; Grizzle et al., 2016). By incorporating these theoretical frameworks, the investigation aims to create a comprehensive understanding of the intricate interplay between technology, critical pedagogy,

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and audiovisual literacy in the context of teacher education.

As preliminary results emerge, discernible trends in the data highlight the central role of audiovisual materials as fundamental supports for the transmission of information in the contemporary digital, and educational, landscape. These trends provide valuable insights into the evolving perspectives and actions of participating teachers. Transformative impact is assessed through the lens of pre- and post-course questionnaires, clarifying the extent to which the course influenced participants' perspectives and practices.

Ultimately, this research aims to empower educators, promoting autonomy in teaching and learning mediated by technology. The anticipated paradigm shift encompasses not only the adoption of technical proficiency and audiovisual media literacy, but also extends to broader principles of equity, democracy and technological awareness in diverse educational contexts. In conclusion, this study contributes significantly to the ongoing discourse on effective and inclusive education in an ever-evolving digital landscape, with the potential to help build possible trajectories of teacher education in the digital era.

References

FERRÉS, Joan. La Competencia en Comunicación Audiovisual: dimensiones e indicadores. In: Comunicar: Revista Científica de Comunicación y Educación. Huelva, v. 15, n. 29, p. 100-107, 2007.

GRIZZLE, Alton et al. Alfabetização midiática e informacional: diretrizes para a formulação de políticas e estratégias. Brasília: UNESCO, Cetic.br, 2016.

SANTAELLA, Lúcia. Comunicação ubíqua: repercussões na cultura e na educação. São Paulo: Paulus, 2013.

SOARES, Magda. Letramento: um tema em três gêneros. Belo Horizonte: Autêntica Editora, 2009.
WILSON, Carolyn et al. Alfabetização midiática e informacional: currículo para formação de professores. Brasília: UNESCO; UFTM, 2013.

Keywords: Audiovisual Media Literacy, Teacher Education, Educational Technology

UNDERSTANDING SECONDARY MATHEMATICS TEACHERS' USE OF CURRICULAR MATERIALS AND RESOURCES FOR PLANNING AND INSTRUCTION IN GREECE

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Abstract: The present study deals with the textbook considering it as one of the most important enculturated enacting media for the development of the *teacher-intended curriculum,* which incorporates the beliefs, interpretations, decisions, and actions that teachers make in order to envision, schedule, plan, design, and implement instruction in the *natural contexts* (institutionalised classrooms). This is a quantitative study, which elaborates a sample of sixty-seven (67) Greek secondary mathematics teachers, who responded to an issued to them structured questionnaire. The questionnaire was specifically and appropriately designed to glean the teachers' judgements concerning the content of the textbooks, the curriculum materials, and resources in use, as well as the way they use them for scheduling, planning, and implementing their instruction according to the officially established curriculum. The methods of the descriptive statistics are used in order appropriate inferences to be drawn. Recommendations are given concerning the state of the used mathematical textbooks in Greece as the means for enacting the sanctioned curriculum, the improvement of the teachers' instructional practices, and for the subversion of specific misconceptions (Lousis, 2017) in the students' mind, which are probably due to the enactment of the sanctioned curriculum via textbooks and have an international existence and perspective.

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Factors influencing Estonian teachers' opportunities and decisions in the selection of learning material

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Teachers have to be the opportunity to make pedagogical decisions. There are non-negotiable decisions related to the learning process laid down by the state's education policy, such as national curricula and educational policy documents. Some decisions teachers can make independently. Teachers' consciousness of the decision-making process is essential because it can impact pupils' learning outcomes (Lloyd, 2019). There are different models for studying the pedagogical decision-making process. One way is to use Bronfenbrenner's (1979) Ecological Model, which offers a multi-level framework for the research of factors influencing teacher decisions, including the choice of learning materials. Decisions at the macro-level are related to legislation, for example to what extent the curriculum gives the teacher freedom to choose the learning material. Meso-level decisions are connected to the people around the teacher, where teachers can be influenced by the needs of pupils, opinions of parents, and collegial recommendations. Micro-level decisions result from the teacher's professionalism, including teaching experience and knowledge about learning material selection (Reichenberg & Andreassen 2017), as well as teacher education.

Factors influencing teachers' decisions have been examined previously from various perspectives in extant research, e.g., how teachers make pedagogical (Lloyd, 2019) or curriculum-related (Siuty et al., 2018) decisions and differences in teachers and principals' perceptions of teacher involvement in decision-making have been identified (Brezicha et al., 2019). However, little is known about how decisions are made when choosing learning materials. The myriad learning materials available make decision-making difficult and time-consuming, which is why teachers tend to choose learning materials without reflection. However, making conscious choices is important, but research about the factors that influence teachers' decisions remains scarce. Therefore, this study aims to examine Estonian preschool and primary school teachers' participation in the selection of learning materials, including the factors that influence teachers' decisions when selecting these materials, based on two research questions:

(1) What decision-making opportunities do Estonian preschool and primary school teachers have in selecting learning materials?

(2) Which macro-, meso-, and micro-level factors influence the selection of learning materials in the opinion of preschool and primary school teachers?

The sample, comprising nine preschool and 10 primary school teachers, was characterized by two criteria. First, teachers were selected from educational institutions that functioned as bases for teacher traineeship, and second, all teachers had experience teaching either preschool or primary school children. In this study, preschool teachers were defined as those who teach children ages

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6–7 (the last year before attending school), and primary school teachers were defined as those who teach pupils ages 7–10. Data were collected through semi-structured interviews using 12 main questions based on two research questions. A qualitative content analysis was conducted on the interviews, which remained open to forming codes, categories, and subcategories.

Teachers' decision-making power and ability to choose learning materials are important competencies, as their decisions affect pupils' learning. Based on Bronfenbrenner's ecological model, it was discovered that the factors affecting the autonomy of teachers' decision-making belong to the meso- and micro-levels. School administrators and the level of autonomy within institutions affect decision-making opportunities. Macro-level factors, e.g., national regulations, exerted no effect. Simultaneously, it was discovered that all three levels from Bronfenbrenner's model – macro-, meso-, and micro-level factors – affect how teachers choose learning materials. It appeared that curriculum, publishers, and finances influence teachers' choices at the macro level. Various parties – e.g., school administrators, colleagues, and pupils – affect teachers' decisions at the meso-level, and teachers themselves are the main influencers at the micro level. When teachers have the opportunity to participate in the selection of learning materials, decisions are made based on experience and knowledge, as well as pupils' needs.

References

Brezicha, K. F., Ikoma, S., Park, H., & LeTendre, G. K. (2019). The ownership perception gap: Exploring teacher job satisfaction and its relationship to teachers and principals' perception of decision-making opportunities. International Journal of Leadership in Education, 23(4), 428–456. https://doi.org/10.1080/13603124.2018.1562098

Bronfenbrenner, U. (1979). The ecology of human development: Experiments by nature and design. Harvard University Press.

Lloyd, C. A. 2019. "Exploring the real-world decision-making of novice and experienced teachers." *Journal of Further and Higher Education.* 43(2): 166-182.

Reichenberg, M., and R. Andreassen. 2017. "Similar but not the same: Comparing Norwegian and Swedish teachers' influence on textbook selection and involvement in text discussions." IARTEM e-Journal 9(1): 4–27. https://doi.org/10.21344/iartem.v9i1.596

Siuty, M. B., M. M. Leko, and K. M. Knackstedt. 2018. "Unraveling the Role of Curriculum in Teacher Decision Making." Teacher Education and Special Education 41(1): 39–57. https://doi.org/10.1177/0888406416683230

Research on Textbook Use in Competency-Based Teaching in high school in Taiwan

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Textbooks have always been the primary basis for interaction between teachers and students in high school classroom in Taiwan. In 2018, Ministry of Education announced specific domain curriculum guidelines, emphasizing competency-based learning with 'core competencies' as the main axis of curriculum development. Core competencies refer to the knowledge, abilities, and attitudes that a person should possess to adapt to present life and face future challenges (Ministry of Education, 2014). Related research has revealed the importance of teachers in textbook usage (Hansen, 2018; Watt, 2015; Taylor, 2013). Textbooks, after all, are static teaching materials and can hardly cater to the individual needs of students in each class. Therefore, teachers must adjust the content and method of using textbooks to respond to student learning.

However, high schools in Taiwan have traditionally focused on teaching subject knowledge, and teacher-centered lecturing remains prevalent. With the widespread use of textbooks, how can the use of textbooks be transformed into competency-based teaching? Furthermore, I'm curious about the current state of high school teaching, two years after the curriculum guidelines were implemented. There is limited empirical research in this area, which could serve as a basis for further refinement and improvement of teaching in textbook use.

Therefore, this study investigates the teaching conditions of the five major subjects (Chinese, English, Mathematics, Social Studies, and Science), attempting to understand how teachers utilize textbooks to implementing competency-based teaching, which includes guiding students in active learning, inquiry into the learning process, and the demonstration of application transfer. The research questions include:

1. What is the performance of high school basic subject teachers in implementing competency-based teaching with textbooks use?

2. How do teachers of different subjects (Chinese, English, Mathematics, Social Studies, Science) implement competency-based teaching using textbooks at different times-before, during, and after teaching? Are there any differences?.

3. Are there differences in the performance of using textbooks for competency-based teaching among different school background variables (remote location, school size) and teacher background variables (subject, years of experience)?

This study first established principles for using textbooks to promote competency-based teaching, through expert interviews, expert reviews, and questionnaire pre-tests, extracting principles of 'initiative', 'inquiry', and 'practice' for textbook use. 'Initiative' towards arousing students' intrinsic learning motivation and interest, 'inquiry' towards participation in the learning process, acquiring strategies through exploration or deep understanding, and 'practice'towards integrating and applying learned abilities to solve problems or transfer to different contexts. Subsequently, a questionnaire survey was conducted to explore the current use among Taiwanese high

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[*]Speaker

school teachers. The survey was conducted online, targeting 516 senior high schools, excluding those used in the pre-test, and randomly sampling 104 schools. The survey was conducted from May 6 to June 11, 2021. A total of 923 teacher questionnaires were collected. After excluding those from teachers outside the five major subjects, there were 675 valid questionnaires, resulting in a usability rate of 73.13%.

The findings are as follows:

1. Regarding competency-based textbook use, teachers prioritize 'initiative' over 'inquiry' and 'practice'. In 'practice', overall performance needs strengthening, indicating that when teachers use textbooks, they still tend to favor subject-oriented knowledge teaching. Although teachers can stimulate learning motivation, there is still a deficiency in guiding students in activities such as 'inquiry' and 'practice'.

2. Regarding the timing of textbook use, teachers are better at using textbooks for competency-based teaching 'post-teaching' and 'pre-teaching' stages than 'during teaching'. It indicates that the performance of the principles of textbook use 'during teaching' is lacking. This is related to the reduced teaching hours for compulsory courses in high school basic subjects, making competency-based teaching more challenging within limited time.

3. The situation of teachers using textbooks to guide 'inquiry learning' is highly correlated with overall competency teaching. Therefore, how to evoke an 'inquiry' process during the teaching process is key.

4. Teachers from schools with different geographic locations and sizes show no significant differences in the use of textbooks for implementing competency-based teaching. Teachers with different backgrounds, including administrators and informal educators, demonstrate relatively higher performance. Furthermore, the Chinese language subject excels in terms of inquiry-based utilization compared to other subjects.

Environment and Humanity in Spanish Textbooks from the 1980s and 1990s of the 20th Century

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Research questions and objectives

How did the national and international contexts, intellectual and scientific discourses on the protection of the environment from the 80s and 90s of the 20th century reflect in or impact on primary and secondary education curriculum and textbooks? The main objective of this research is to examine to what extent the new trends and approaches on environmental issues had any effect on the curriculum and textbooks from the 80s and 90s.

The relationship between human beings and their socio-natural environment is of particular interest because it reveals where school knowledge places human beings in relation to their environments. The two key concepts are therefore the environment and the human being. In addition to the relationship between the human beings and their natural and social mileu, the scale on which their representation is applied is also analyzed.

What breadth of surroundings do the textbooks portray? Do they open up beyond the immediate context showing a common broad socionatural territory? When do the terms "environment" or "milieu" make their appearance in the curriculum and textbooks?

The same applies to people as human beings, as a macro collective of equals. In particular, we pursue to identify the explicit mention of the category of "humanity" in the curriculum and in the textbooks, in order to understand in what contexts and in what sense, meaning and orientation of the concept of "humanity" is developed.

Hence, we investigate how the idea of a human identity, a consciousness of species -humanity- which shares a common interconnected macro-environment, is gradually constructed or approached.

How far did school knowledge move away from or closer to intellectual approaches and scientific discoveries?

This research traces the (re)presentation of "environment" and "humanity" in the curriculum and in the material culture of the school at the end of the 20th century in Spain.

Methodological approach

The research is being carried out using three kinds of documentary sources: first, discourses

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on the environment and scientific-philosophical approaches to the human being (1982 Nairobi Conference, Edgar Morin, Norbert Elias). Second, legislation on education (laws and decrees) and the curriculum. Third, social and natural science textbooks for students between 12 and 16 years old. This study contemplates two different educational laws: the 1970 General Education Law that established compulsory schooling until the age of 14, and the 1990 Law on the General Organisation of the Education System, which designed a four-year compulsory secondary education. Hence, we examine textbooks from the last two years of compulsory education and first two years of non-compulsory education from the 1970 education reform, and textbooks from the four years of compulsory secondary education from the 1990 education reform. This methodological option allows an analysis of the progression of knowledge and a comparison between curricula and textbooks intended for the same age groups in two different decades with contrasting contexts and educational policy frameworks.

The textbook sample consists of ten social sciences textbooks and ten natural sciences textbooks from each decade. The selection has been based on the criteria of representativeness, such as the prestige of the publisher, the reputation of the authors and the number of editions. In this way, sources and results are triangulated, addressing the fields of educational policy, existing (contextual) philosophical and scientific discourses, and educational resources that bring knowledge directly into the classroom. This is how we are discovering the degree of association or dissociation between texts and context.

The research is of a qualitative and discursive nature, but an accounting of the appearance of the terms "environment" and "humanity" in the documents examined is carried out, in order to then analyse the meaning given to their use and insertion in the contents. Given the complexity of the key concepts, a number of derived categories or indicators of their presence are developed. "Nature" and "society" as environments coexist with other more concrete and closer spaces, such as "surroundings", and with other wider spaces such as "planet Earth". From "humanity" as a category, on the other hand, derive other categories such as "human being", "humans" and the term "men" from a generic conception.

Another instrument of empirical analysis is the linguistic particle "we". The pronoun "we" is analyzed to identify the scope of the group to which it alludes, how inclusive it is with respect to people and "human beings".

In addition to textual and linguistic analysis of the appearance and use of the meaning given to "environment", "humanity" and "we" groups, textbook illustrations are also analysed. The drawings and photos incorporated to illustrate and support the use of the terms reveal additional information about its conception and meanings.

Description of the data and how the data are analysed if empirical research

The nature of the data is conceptual, textual and linguistic. Thus, the methodological-conceptual apparatus includes theoretical foundation and definitions on the main categories: "environment" and "humanity". There is quantitative data. The number of occurrences of the categories, per page, is counted, so that the reader's exposure to the terms can be calculated. But more important is the qualitative analysis of these appearances and the accompanying illustrations. This qualitative analysis explains the meaning and use of the categories, in order to identify their closeness or distance from the messages conveyed by the complementary sources: discourses, legislation and science.

Preliminary results

Although, depending on the curricular prescriptions per school year, both the immediate national, social and natural surroundings is dealt with in the contents, there is a perceived growth of the space shown as international contexts and territories: other countries and a shared environment, above all from the geographical perspective.

The category "humanity" hardly appears in educational legislation, neither in the curriculum nor in textbooks. It is not a concept that often appears explicitly, and there is no clear elaboration of the relationship between humanity and the rest of living beings or the environment in an interdependent way. The gap between the scientific-philosophical discourses of the time and school knowledge is wide. But there are textbooks of some specific publishers that do incorporate it more frequently and with a broad meaning.

However, the pronoun "we" is a grammatical particle that appears very frequently alluding to different groups of people, including "the human species". It is therefore possible to perceive an allusion to humanity implicitly through the pronoun but not explicitly through the term, about which there seems to be more reservations for its direct visibilisation.

We also identify a greater appearance of the concept of "humanity" in social sciences textbooks than in natural sciences textbooks, and little increase in its treatment in the textbooks of the 1990s, after the educational reform, with respect to the textbooks of the 1980s.

REFERENCES

Austin, J. L. (1962). *How to do things with words.* The William James Lectures delivered at Harvard University in 1955. Oxford: Clarendon Press

Çetin Köroğlu, Zeynep & Elban, Mehmet (2020). National and Global Identity Perspectives of Textbooks: Towards a Sense of Global Identity, Advances in Language and Literary Studies 11(5): 55-65. DOI:10.7575/aiac.alls.v.11n.5-p.55

Donnelly, Jim & Ryder, Jim (2011). The pursuit of humanity: curriculum change in English school science, History of Education, 40(3), 291-313, DOI: 10.1080/0046760X.2010.521196

Quessada, Marie-Pierre; Clement, Pierre; Oerke, Britta; Valente, Adriana (2008). Human Evolution in Science Textbooks from Twelve Different Countries, *Science Education International* 19(2), 147-162.

Michael Schroter (ed.) (1990). Norbert Elias. La sociedad de los individuos. Ensayos. Ediciones península.

Ways and Possibilities of Using Learning Materials in Galleries and Museums

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This paper presents the results of research focused on the use of learning materials in the environment of non-formal education, specifically in galleries and art museums. The constituent part of the research collection consists of institutions located in the Ústí nad Labem Region in the Czech Republic. It is the region where the home university of the authors of this contribution is located and the relationship with such institutions is essential for the students, who are in the process of preparation for becoming teachers of art education. The teaching profession is traditionally bound by formal education; however, the position of non-formal education is becoming more and more distinct in the curriculum for elementary schools, in particular with the curricular reform which started in 2022.

Mortensen, Smart (2007) assert museums (and within the context of this research galleries as well) present a different kind of learning than school. It is a kind of learning that cannot be measured immediately after two hours long visit to a museum or a gallery. Museums present the opportunity to learn at students' own pace and the possibility to choose subject matter according to one's interest without the pressure of following assessment (Kisiel, 2007). Falk and Dierking (2000) claim that "one's own choice and control" are important tools for optimizing students' learning. Kisiel (2003, 2007) further mentions that well-conceptionally structured worksheets (one of the very frequently used learning materials in museums and galleries) can span the gap between structured classroom learning and learning in an informal environment. His research suggests that teachers choose to work with the worksheets in order to make the visit to the museum better structured as well as to reinforce students' concentration and learning (Kisiel, 2003).

The following research questions were determined:

Which learning materials are created in galleries and museums in the Czech Republic?

How are learning materials involved in educational programs?

One of the data segments works on the half-structured interviews with workers of selected institutions, whose work content is a concept design and management of the auxiliary programs or creation of learning materials. The interviews were carried out within the two-year-long project which was focused on the analysis of a conception of accompanying and educational programs in galleries and museums of art in the Ústí and Labem Region. The interviews are analyzed using the method of open coding (Charmaz, 2007), and the resulting outcomes are categories that define concrete approaches and options for integrating learning materials into educational

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programs. The results which stem from the analysis suggest that learning materials are used in three major ways: 1) Learning materials were designed for the lecturer's use and intended for participation in the programs; 2) Learning materials were designed as self-service, but lecturer engages them during the program; 3) Learning materials were designed as self-service are not used during the program. The contribution aims to present constituent subcategories as well as to present specific examples of using learning materials by individual institutions.

Such findings are further compared with data from other sources: 1) written reflections of the students of the Department of Art and Education, Faculty of Education, J. E. Purkyně University in Ústí nad Labem, who visited auxiliary programs in galleries or art museums in the last five years, in which case learning materials were used 2) questionnaires which were sent to educators in galleries and museums across the Czech Republic.

The outcome of the research is, in the first place, to name and characterize types of learning materials that are used in galleries and museums in the Czech Republic and primarily the categories of the ways of integration of learning materials into educational programs, which are further compared with the outcomes of domestic as well as foreign similarly focused studies.

References:

Falk, J. H. and Dierking, L. D. (2000). Learning from museums: Visitor experiences and the making of meaning. Walnut Creek, CA: Altamira Press

Charmaz, K. (2006). Constructing grounded theory. Thousand Oaks, Calif.: Sage Publications.

Kisiel, J. F. (2003). 'Teachers, Museums and Worksheets: A Closer Look at a Learning Experience', Journal of Science Teacher Education. 14(1), 3–21.

Kisiel, J. F. (2007). 'Examining Teacher Choices for Science Museum Worksheets', Journal of Science Teacher Education, 18(1), 29–43.
Mortensen, M. F., and Smart, K. (2007). 'Free-Choice Worksheets Increase Students' Exposure to Curriculum during Museum Visits', Journal of Research in Science Teaching, 44(9) 1389–1414.

Keywords: gallery pedagogy, museum pedagogy, art education

Environmental topics and climate change in Italian history textbooks for middle-schools

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Since school year 2020-2021 in Italian school system is introduced a new compulsory subject called "Civic Education". It is taught through all the other subject, for example Italian, History, Maths and so on and it is compulsory for every order and degrees of schools, from kindergarten to high schools.
The law which governs this new subject tells that civic education revolves around three axes: the study of Italian Constitution, sustainable development and digital citizenship. Sustainable development includes environmental and territorial education, 2030 Agenda SDG, knowledge and protection of the territory.

For this reason, also the textbooks have to change, including topics linked to this new subject, and I decided to examine recent history textbooks for middle schools to understand how and which historical events are considered useful to study and deepen environmental topics and possibly climate change.

I choose to focus on middle school for several reasons. First of all, Italian law manages primary and middle schools together, so the school's programs are consecutive and the same in all Italian middle schools. After these three years, pupils have to choose which kind of schools they want to attend, and each kind of high school has different legislation. Secondly, I think it is an important moment of development of younger students (11-13 year old) and, especially in Italian school system, here they start to approach to study in a more serious way. Last, during the three years of middle school, students study for the first time history from the Middle age to the Contemporary age, so textbooks must be inclusive and comprehensive but at the same time appropriate for the age of the students.

Italian middle schools is composed by three class: first, second and third. Each class has an history book. I would like to take in consideration five different history textbooks edited by five different publishing houses in the last few years. In particular, I will take in consideration textbooks published by Zanichelli, Feltrinelli, DeAgostini, Loescher and Pearson-Edizioni Scolastiche Bruno Mondadori. I would like to analyze and to list how many environmental topics are inside the different books for each volume. It would be a long (historically) analysis from the Middle Age to the contemporary times. Indicatively, middle schools' textbooks have the following division:

1) Volume 1: from the fall of the Roman Empire to the 15th century

2) Volume 2: from the Age of Discovery to the end of the 19th century

3) Volume 3: from the 20th century to today

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*Speaker

The variables I would like to take into account for each volume are:

- Direct indication to Civic Education

- Historical period

- Event (main topic in which it is insert, section or unit of the book)

- Sector/field (political, agricultural, cultural, industrial etc.)

- Any personalities mentioned

- Any past-present connections

The final objective is to create an overview of the editorial proposals on the environmental themes linked to Civic Education. I will analyze the data with a descriptive method. The data collected according to the variables stated previously will be inserted into tables. The tables will be divided by volume and by section or unit of the textbook. In this way, it would be easier to identify common factors of the different textbooks and also the choices made by the authors.

Direct indications to Civic Education are easily recognizable because they are often specified into the book. For example, if there is a link with 2030 Development Goals, authors usually include the logo of the intended objective. Otherwise, authors create specific "boxes" or supplementary worksheet where they use to quote "Civic Education". Or even in the index, you can easily see the references to the topic. In this study, I use the word "data" to identify environmental topics into the history textbook: side-boxes or/and references in the narrative.

On the occasion of the conference, I would like to present the data relating especially to Volume 1 and maybe the first part of Volume 2 of the several textbooks. Everything will be indicated properly. I would focus the first part of my analysis on medieval and early modern history. I think it could be more interesting to understand the choices relating to past history compared to contemporary history.

References:

Castro S. – Gola G. – Talarico R. (edited by), *L'insegnamento della storia oggi*, Carocci, Roma, 2023

Monducci F. – Portincasa A., *Insegnare storia nella scuola secondaria*, Utet Università, Torino, 2023

Mortari L., *Educazione ecologica*, Laterza, Bari, 2020

Panciera W. – Savio A., *Manuale di didattica della storia*, Le Monnier Università, Milano, 2022
Civic education institutional page on the Ministry of Education website:
https://www.istruzione.it/educazione civica/

Keywords: environment, history textbooks, civic education

Climate change in Geography educational resources: teachers' perspectives

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This paper aims at analysing how Geography teachers relate to the topic of Climate Change. Recent curriculum changes have practically disregarded the topic from Geography syllabuses, more focused now on Basic Learning Targets and the development of general skill all school subjects should address. In spite of this absence of Climate Change topics the interrelation between human and natural phenomena is a core idea in all years where Geography is a Compulsory subject.

The importance of teaching about climate change in schools is becoming very important if we want our students to understand and address its impacts, empowering them with the knowledge, skills, values and attitudes needed to act as agents of change (UNESCO, 2023). Still, recent published reports state that, in spite of the importance of the topic, it is not an explicit topic in the curricula of many countries. In fact, even if the topic is addressed, a high percentage of students still faces difficulty in explaining what it is about, leaving also concerns related to the quality of the education about climate change than is being implemented (UNESCO, 2023).

In Europe, the situation differs from country to country. Enka and Budke (2023) consider that the fact that, in some countries, climate change is an abstract concept in the curricula, may be seen as an advantage as it gives teachers more creativity to address the topic the way they want to. The problem seems to be more problematic for less experience teachers due to the fact that, as when content is not explicitly mentioned, probably they will not teach about it.

The research question we want to investigate is this: how are teachers dealing with the fact that curriculum changes have reduced the visibility of important topics such as Climate Change and how are educational resources addressing the topic?

The methodology of analysis will focus a mixed method type using qualitative and quantitative approaches. Curriculum documental analysis will help understand how the topic of climate change is being addressed in the present Portuguese curriculum. Geography teachers will also be questioned about the topic, through a questionnaire, as they are the ones talking about the climate change in the classroom. We want to understand if they teach about climate change, what are the main resources used (including textbooks) and what Geography topics are connect to Climate Changes activities.

Textbooks have to be aligned with the national curriculum, which means that, if the topics are not explicit in terms of learning, most certainly editors will not focus on them. So, what other sources of information are Geography teachers using to talk about Climate Change? These are examples of the questions we will ask them.

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[*]Speaker

The research will provide both qualitative and quantitative data that will help to understand what kind of educational resources are being mobilized to address the topic of climate change. Through this research we intend to demonstrate that, in spite of not being present in the new curriculum, the topic of climate change is very important as a school Geography content.

As mentioned above, the main purpose of the research is to understand the role of textbooks and educational media in providing activities and material that can be explored by teachers to talk about climate change in their classrooms. Preliminary data suggest that the topic is addressed mainly in Basic Education (12 – 15 years old), and that Textbooks are still an important source of information. Yet, other sources gain relevance such as the internet and documentaries. In many cases, addressing the topic of climate change seems to be dependant on the particular interest on the teacher, not so much the relevance of the topic. Learning from teachers is certainly a good indicator on how Textbooks and other educational media should support the teaching of such an important topic. And the results of the research will be sent to publishers and author that are responsible for creating such educational materials.

UNESCO (2023). *Climate change communication and education country profiles: Approaches to greening education around the world.* Global Education Monitoring Report.
https://unesdoc.unesco.org/ark:/48223/pf

Enke KA and Budke A (2023) Preparing students for a changing world: how geography curricula in Europe are tackling climate change. *Frontiers in Education (8).*
https://doi.org/10.3389/feduc.2023.1216780
Hermans, M. (2016). Geography teachers and climate change: Emotions about consequences, coping strategies, and views on mitigation. *International Journal of Environmental and Science Education, 11*(4), 389–408. https://doi.org/10.12973/ijese.2016.326a

Primary music textbooks as dispositive of power reproduction. A three-phases Critical Discourse Analysis for the study of identity and knowledge.

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Textbooks are a widely spread didactic resource in primary school classrooms, becoming an authority reference in the cultural transmission of the curriculum (Gimeno, 1988). This paper addresses how the socially constructed discourse in the music education curriculum links with the creation of several forms of power (Foucault, 1973). We are concerned with the construction of identity and how knowledge is constructed. It is relevant then, to turn to the theoretical literature of postcolonial and gender studies, as they represent a recognised research approach that problematizes concealments and denied identities, as well as knowledge that is disregarded or considered of a lower order. Following Van Dijk (1999), Critical Discourse Studies (CDS) investigate how the abuse of social power, domination and inequality are practised, reproduced, and occasionally combated through texts and speech in social and political contexts. We know that music education in primary schools should provide the knowledge for good basic musical education, but we are concerned that this basic transmission of musical knowledge, through the way it is presented in textbooks, may contribute to an ideologically biassed way of understanding ourselves as human beings and recognising ourselves in our popular, identitarian knowledge, rooted in our particular cultural roots. Which knowledge and which identities become relevant and can be determinant in the construction of subjectivity using music education textbooks at primary school level? Is CDA then an appropriate methodological and epistemological option for the study of discourse and power in music education textbooks?

The aim of this research is to find out if music education content, as is presented in textbooks, influences the development of identities and knowledge. To get this research objective, we build up the analysis using the methodological contributions of Critical Discourse Analysis (CDA), developing our own CDA method based on three previous models: Fairclough's Three-Dimensional Approach (1995), Van Dijk's Socio-Cognitive Approach (2008) and Wodak's Discourse-Historical Approach (2003). Our particular model maintains the three steps proposed by Fairclough and introduces the cognitive contributions from Van Dijk's model and the importance of analysing discourses as a possibility of social transformation from Wodak's approach. Thus, our analysis consists of three phases: i) In the first phase we develop an exhaustive semiotic analysis of music textbooks focusing on songs, auditions and movement proposals. ii) In the second phase, we contextualise the results of the semiotic analysis in the institutionalised schooling framework and transfer it to a study of discursive practices. iii) We inquire about the translation made by discourses in our daily life practices. In this third phase, we can also appreciate how these social practices produce and reproduce hegemonic cultural discourses and how the power relations identified in the second phase take shape and become evident.

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*Speaker

The corpus of this analysis is composed of twenty-four textbooks selected according to three criteria: books adapted to the new Spanish educational legislation (LOMLOE), books published in the two languages of the Valencian Community (Catalan and Spanish), and finally heterogeneous publishers, mixing specific Valencian located publishers with Spanish publishers.

Finally, the paper will show how music textbooks can be spaces of power in which identities are formed and certain knowledge is created according to hegemonic cultural codes, leading to the conclusion that not everything is represented in music textbooks. Thanks to the CDA process and the epistemic tools taken from postcolonial and gender theory, we could appreciate not only the presences, but also the absences and the meanings of those absences in the music education textbooks.

Fairclough, N. (1995). Critical discourse analysis. The critical study of language. Longman

Foucault, M. (1973). El orden del discurso. Fábula.

Gimeno, J. (1988). El currículum: Una reflexión sobre la práctica. Morata.

Van Dijk, T. A. (1999). El análisis crítico del discurso. (Trad. M. González). Antrophos 186, 23-36.

Van Dijk, T. A. (200). Discourse and power. Gedisa.

Wodak, R. (2001). The Discourse-Historical Approach in R. Wodak & M. Meyer (Eds.). Methods of Critical Discourse Analysis. Sage publications.

Discourse analysis of 6 "influential" accounts on X(Twitter) powered by the institution to share educational resources

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This paper is part of Sylvie Mas's thesis. The thesis focuses on the professionalization of teachers and its renewals linked to the rise of digital social networks and its uses by teachers and teacher collectives (Beauné et al., 2019; Lantz-Anderson et al., 2018). Indeed, some of the most active teachers online are playing a growing role in the posting and renewal of their resources by their peers, notably proposing new informal training situations.

We're interested in so-called "influencer" teachers. By this, we mean teachers in a position to exert an influence mediated by X (Twitter) on the members of their professional network. We interrogate this understanding of "influencer" by focusing on those individuals who have this presumed position of influence according to the platform's metrics. Their actual influence remains presumed (our data do not allow us to assess this aspect). We estimated this position of influence according to three criteria: the intensity of connectivity in the network, the size of the audience, and the frequency of publication. Among the most connected individuals on a given topic, we selected those with an audience of over 1,500 followers and an average publication frequency of more than one post (tweet) per day.

In a recent article, we analyzed the discursive productions of three "influencer" teachers (Mas & Normand, 2023). We considered their discursive productions as a set of actions linked to the design of the platform contributing to the construction of their meaning. To this end, we developed a method that takes into account actions prior to the writing of published content. The aim of this method was to provide a preliminary to the linguistic analysis of the content carried by the platform.

Our communication project is a continuation of this work. We plan to present the results of a contrastive analysis of the discursive productions of a set of influential accounts on X(Twitter) dedicated by the educational institution to sharing pedagogical resources. These accounts are dedicated to different teaching disciplines and are hosted by teachers who are said to be "experts" in their discipline, and who represent, via these accounts, the Direction générale de l'enseignement scolaire (Dgesco) and the Direction du Numérique pour l'Éducation (DNE).

Our analysis will be based on observation of the pre-publication actions that define the format of publication, using the method we developed earlier: how do these "expert" teachers representing the educational institution on X (Twitter) mobilize actions relating to the format of dissemination of their discursive productions? We'll complete the analysis with a qualitative approach to the internal content of the publications: what uses do these teachers make of images, typography and punctuation, hashtags, mentions and emojis, enunciative deictics and stylistic

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devices? To what end are these means put to use? We'll also be looking at the extent to which these different accounts share common interaction practices, given that they share a common goal.

The study of this set of institutional accounts aims to shed light, by contrast, on the discourse of "influencer" teachers on this same platform. A discourse that shapes their image, through what they say and how they say it (Maingueneau, 2016). Our approach at the nexus of linguistics, educational sciences and information and communication sciences aims to provide a better understanding of how these "influencer" teachers contribute to professional training.

Références

Beauné, A., Levoin, X., Bruillard, E., et al (2019). Collectifs en réseau d'enseignants producteurs de ressources, Rapport scientifique des laboratoires STEF et EDA. Convention DNE. Université Paris 5 Sorbonne Descartes ; ENS Cachan. URL : https://hal.science/hal-02022830 /file/rapport_final.pdf

Lantz-Andersson, A., Lundin, M., & Selwyn, N. (2018). Twenty years of online teacher communities: A systematic review of formally-organized and informally-developed professional learning groups. Teaching and Teacher Education, 75, 302-315.

Maingueneau, D. (2016). L'ethos discursif et le défi du Web, Itinéraires (En ligne), 2015-3, mis en ligne le 01 juillet 2016. DOI : https://doi.org/10.4000/itineraires.3000

Mas, S. et Normand, S. (2023). Affordances et contenu des productions discursives sur Twitter (X) : le cas de trois enseignants " influenceurs ". Espaces Linguistiques, (6). https://doi. org/10. 25965/espaces-linguistiques.600

THE LEVELS OF RELATEDNESS BETWEEN TEXTBOOK EXPOSITORY AND EXERCISE TASKS BEARING TENETS OF REASONING-AND-PROVING IN EUCLIDIAN GEOMETRY

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The worked-out examples in expository tasks in mathematics textbooks are tools that are made available to provide guidance and sequences of reasoning that could be used to derive solutions in subsequent exercises. However, these guiding tools should be presented with the intent to provoke learners' creative mathematical reasoning, instead of learning by imitating the solution templates presented in expository tasks. In this paper, we contend that mathematics is learned meaningfully when reasoning and proof-related activities (R&P) are made available to learn. Moreover, we posit these activities; *pattern identification, making conjectures, providing proof and nonproof arguments, and evaluating arguments* should be made available in textbooks in a manner that encourages "productive struggle". That is, exercise tasks should not be solved by directly referring to the solution templates in expository tasks. Instead, the solution template should be used as a thinking tool to produce plausible, and evidence of novelty in arguments that shape the solution process in exercise tasks. Lithner (2017) defines this process by distinguishing imitative and creative mathematical reasoning. Creative mathematical reasoning refers to the exposure to sequences of reasoning that have not been encountered before (Silver, 1997 cited in Lithner, 2017). While imitative reasoning is defined when worked-out examples, together with their sequence of reasoning are used directly to solve exercise tasks (Lithner, 2017). Although this distinction is not elaborated on in this paper, it forms part of the bedrock of the framing of the levels of relatedness between textbook tasks which are of concern to this paper.

A shred of evidence exists in the literature that reasoning and proof-related activities should be part of the everyday teaching and learning of mathematics across all grades (i.e., Fu et al., 2022; Zhang & Qi, 2019). Moreover, curriculums (i.e., Department of Basic Education (DBE), 2011) and professional bodies in education (i.e., National Council of Teachers of Mathematics (NCTM), 2000) contest that these activities should be fostered in curriculum resources such as textbooks and during enactment in the classroom. Regardless of these contestations, to date, research studies show that tenets of reasoning and proofing are not adequately presented in mathematics textbooks, and in the mathematics classroom (i.e., Fu et al., 2022; Zhang & Qi, 2019). Contrary to these findings, anecdotal evidence in the same studies shows that the tenets of reasoning and proof-related activities are slightly prioritised in geometry as compared to other topics in mathematics textbooks. However, it was apparent that the extent to which expository

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tasks and exercise tasks are related remains in the background. In other words, the extent to which imitative and creative mathematical reasoning is fostered through the tenets of R&P in expository tasks and exercise tasks is not yet explored. This paper, therefore, seeks to contribute to the body of knowledge in the field of reasoning and proving in mathematics textbooks by providing an insightful interrogation of the levels of relatedness between textbook expository and exercise tasks bearing tenets of R&P. We hope that this study would provide knowledge that could be used when curriculum resources, particularly in Euclidian geometry are developed in the future.

The following research questions are subject to this paper; What is the level of relatedness between expository and exercise tasks bearing tenets of R&P on the topic of Euclidian geometry in a Grade ten mathematics textbook?

What do the identified levels of relatedness amid textbook tasks bearing tenets of R&P suggest for opportunities to learn creative mathematical reasoning in Euclidian geometry?

To answer these research questions, a dyadic analytical framework of R&P-LR was used. This framework was established by merging two frameworks, the framework of tenets of R&P by Zhang and Qi (2019) and the framework of the levels of relatedness by Jader et al. (2020). A qualitative approach and textbook content analysis methods were used. In conducting the data analysis, three mathematics assistant researchers were consulted as a part of the quality criteria of data analysis. One mathematics textbook that is approved according to the standards of the curriculum was randomly sampled amongst textbooks that are used in public schools in South Africa. The preliminary results show that the prominent level of relatedness that surfaced between the textbook tasks was "global low relatedness". In other words, the exercise tasks could not be solved by directly referring to solution templates in expository tasks.

Reference

Department of Basic Education. (2011). Curriculum Assessment Policy Statement grades 10 to 12 Mathematics. Pretoria Department of Basic Education.

Fu, Y., Qi, C., & Wang, J. (2022). Reasoning and proof in algebra: the case of three reform-oriented textbooks in China. Canadian Journal of Science, Mathematics and Technology Education, 22(1), 130-149.

Jader, J., Lithner, J., Sidenvall. (2020). Mathematical problem-solving in textbooks from twelve countries. International Journal of Mathematical Education in Science and Technology, 51(7), 1120-1136.

Lithner, J. (2017). Principles for designing mathematical tasks that enhance imitative and creative reasoning. Zdm, 49(6), 937-949.
Zhang, D., Qi, C. (2019). Reasoning and poof in eighth-grade mathematics textbooks in China. International Journal of Education Research, 98(2010), 77-90.

Considering the unthought materiality of digital media. Analyzing a corpus of educational resources on the environmental impact of digital technologies (Wallonia-Brussels Federation, Belgium)

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The untought materiality of digital media - in particular their environmental, social and economic implications - is raising as an issue in the fields of information and communication sciences as well as media education. In his book *Mediarchy*, Yves Citton takes advantage of the research carried out in the field of media archaeology to provide a more detailed understanding of the material aspects of digital devices, *a.o.* their persistence in the natural ecosystem (Hertz et Parikka 2012). He identifies courses of action for media education, which focus on the work of *attention* to be carried out by the user of digital media (Citton 2019). From another perspective, David Buckingham calls for *re-thinking media literacy* by considering it through a *bigger picture*. This shift in focus involves going beyond a list of "good digital practices" in favor of an informed understanding of the issues at stake with regard to social and political considerations. Among these is the rise of *digital capitalism* (Buckingham 2020) - which is obviously connected to the unlimited exploitation of material resources for profit.

This proposal considers the study of a corpus of Belgian educational resource devoted to the environmental impact of digital media and technology. Using the theoretical and methodological tools of discourse analysis (knowledge discourse, rhetorical strategies for adapting to the target audience, *etc.*) and information and communication sciences (semiotics of screen writing, knowledge mediation, *etc.*), I intend to evaluate how the above concerns are, or are not, taken into account. More specifically, my analysis aims to provide answers to the following question: how (*i.e.*, through which knowledge and competencies) do the educational resources on the environmental impact of digital technology proposed for French-speaking Belgian education aim to develop learners' digital media literacies?

Our corpus will be extracted from the *E-classe* digital platform (https://www.e-classe.be/). Launched in 2019 at the initiative of the "Service du Numérique Éducatif" of the Federation Wallonia-Brussels, it provides French-speaking Belgian teachers with validated educational resources to help them develop their lessons. I'll be looking first at the way this platform puts resources into circulation, *i.e.* how it enables their *editorialization* understood as "enhancing the corpus by selecting texts, setting up collections, establishing thematic indexes, and regularly introducing editorial focuses based on audience type" (Mounier et Dacos 2010, 63)(1). I will also report on how the platform's features anticipate manipulation by the teacher, through tools for combining, remixing, sharing and linking texts of various formats and status.

Next, I will be focusing more specifically on analyzing the resources in the "environmental im-

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*Speaker

pact of digital technology" collection, comprising 25 items. I will identify the addressed issues, types of ressources - *didactic/functional/semantic learning material* (Hansen et Gissel 2017, 125) -, validating authorities and anticipated audiences. I also will be interested in disciplinary knowledge to witch the "digital" as a teaching object refers, as well as exercised competencies to acquire it. Our hypothesis, based on preliminary analyses, is that these resources are still often dependent on good, standardized uses of digital media to be implemented on an individual level, neglecting consideration of the *bigger picture* and the development of fine-tuned attention to the materialities of digital devices. In this sense, the development of digital literacy remains mainly focused on uses/skills and not on understanding materialities in a broader perspective (*e.g.* planned obsolescence from the design level, soil pollution, *etc.*).

Bibliography

Buckingham, David. 2020. " Epilogue: Rethinking Digital Literacy: Media Education in the Age of Digital Capitalism ". *Digital Education Review*, no 37: 230-39. https://doi.org/10.1344/der.2020.37.230-239.

Citton, Yves. 2019. *Mediarchy*. John Wiley & Sons.

Hansen, Thomas Illum, et Stig Toke Gissel. 2017. " Quality of Learning Materials ". *IARTEM E-Journal* 9 (1): 122-41. https://doi.org/10.21344/iartem.v9i1.601.

Hertz, Garnet, et Jussi Parikka. 2012. " Zombie Media: Circuit Bending Media Archaeology into an Art Method ". *Leonardo* 45 (5): 424-30. https://doi.org/10.1162/LEON_a_00438.

Mounier, Pierre, et Marin Dacos. 2010. *L'édition électronique*. Paris: La Découverte.

(1) " On entend, par éditorialisation, la valorisation du corpus par la sélection de textes, par la mise en œuvre de collections, par l'établissement d'index thématiques, par la mise en place régulière de focus éditoriaux en fonction du type de public " (*original quote*).

Schoolbooks and inclusive teaching. An Action Research conducted in Italy

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Research problem and research question - The UN Agenda 2030 urges States to implement equitable and inclusive education. Inclusive learning is based on adapting times, spaces, strategies and materials. Among the latter elements, the school manual is a primary tool for sharing knowledge and encouraging moments of participation and interdependent cooperation between students. Furthermore, this teaching aid is configured as a cornerstone of home study moments. It constitutes a solid basis for learning content and personal reinterpretation of what has been learned. The problem of accessibility of the school manual is broad, and it concerns many students. The Italian Dyslexia Association, in partnership with the Italian Publishers Association, also implements, based on a specific request from the parents of the students, adjustments to the school book to make it compatible with the compensatory tools certified in the Personalized Educational Project in Italy called PDP. The phenomenon becomes wider by considering the needs of pupils with autism spectrum disorder, some of whom have good reading skills but do not understand the text if there is no adequate iconographic equipment to clarify the abstraction of the language. Moreover, some students of foreign origin also experience difficulties understanding texts due to a linguistic disadvantage not appropriately supported by visual aids and glosses. Furthermore, the same need emerges in the support of students with hearing disabilities who require accurate subtitling, unambiguous images and transcriptions of audio tracks. In light of these training needs, it is necessary to understand if there are different levels of inclusiveness between the various editorial products and, in addition, what tools could guide teachers in selecting the most suitable and accessible textbooks.

Explanation of method – The Action Research was chosen because it is configured as one methodology able to resolve factual issues. Therefore, it is an empirical research strategy that requires the investigation to be conducted in the field, structured and based on close collaboration between researchers and teachers with the aim of provoking improvements.

Therefore, using the A-R methodology, two easy-to-use tools have been designed, one for "blended" schoolbooks (paper with digital expansions) and the other for e-books. The planned research process was divided into five different and complementary moments, as follows:

- phase 1: writing of questionnaires for two exploratory surveys;

- phase 2: exploratory investigations: data collection and analysis;

- phase 3: designing of analysis tools based on data analysed;

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- phase 4: pilot test and tools implementation;

- phase 5: dissemination of analysis tools in a natural context.

The fundamental objective of the first survey was to investigate teachers' perceptions in relation to "blended" books. The second investigation, however, aimed to understand the characteristics that make an e-book accessible and usable. Responses were collected using an online form consisting of multiple-choice questions and five-point Likert scale questions. Teachers were recruited voluntarily through a snowball sampling method. 200 teachers from all over Italy participated in the first survey and 100 in the second one.

Some of the questions asked to the teachers are the following:

1) do dyslexia-friendly fonts make texts easy to read for everyone?

2) are pair working and cooperative learning key methods in schoolbooks?

3) are digital and interactive exercises easy to use for all the students of the class?

Data analysis – Two analysis checklists were designed from the surveys described above. These tools were designed with 15 items respectively and the score was calculated in thirtieths. The presence of a characteristic has a value of 2 points, the absence 0 points, while the partial presence has a single point. A school manual that obtains less than 18/30ths would not adequately support all students' learning if teachers did not carefully adapt and remodel it. During the 2022-23 school year, 131 answers were collected: 48 mixed books and 3 e-books achieved a positive rating.

Dissemination and results- Through the "Test your Text" campaign, the analysis tools were disseminated among the school community to make them available for decision-making processes. The evaluation grids were extended to teachers of all school levels and grades.

90% of e-books and 55% of mixed textbooks have been considered by teachers as not properly accessible and usable. Teachers of all orders and grades reported critical issues concerning the following characteristics:

1. absence of highly readable fonts;

2. poor comprehensibility and accessibility of the videos;

3. absence of audio-reading tools;

4. difficulty in using digital exercises;

5. poor promotion of peer tutoring and cooperative learning.

To better understand the phenomenon, new research will be carried out. Understanding the features of current texts could be functional for the school community and publishers. From an inclusive perspective, it is necessary to think of new answers to put all students in conditions to achieve their own educational success. A further dissemination process will be carried out in 2024 through conferences, papers and social media.

References

Meo, D., & D'Alonzo, L. (2022). Libri scolastici e inclusione. In F. Batini, G. Agrusti, I. Vannini, F. Falcinelli, R. Salvato (Eds.), La ricerca educativa per la formazione insegnanti: Proceedings of Perugia University conference, (p. 163). Perugia: Pensa Multimedia;

Meo, D., & D'Alonzo, L. (2022). Il potenziale inclusivo del libro di testo: una ricerca-azione, RicercAzione, Vol. 15, n. 1, (pp. 255-265). Rovereto: Iprase;

Meo, D., Landoni, M., & D'Alonzo, L. (2022). Towards an inclusive learning experience: Proposing a checklist to assess digital textbooks. In D. Parmigiani & M. K. Murray (Eds.), Teaching & Learning for an Inclusive, Interconnected World: Proceedings of ATEE/IDD/GCTE conference, (pp. 241-253). Sestri Levante (Italy): Association for Teacher Education in Europe.

UN (2006). Convention on the Rights of Persons with Disabilities (CRPD). https://www.un.org/disabilities/documents/e.pdf (31.01.24).

UN (2022). Transforming Our World: The 2030 Agenda For Sustainable Development. https://sdgs.un.org/sites/(31.01.24).

Teaching without prescribed curricula and without texbooks : a way of expressing a pedagogical expertise ?

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Media and information education (EMI) is a cross-disciplinary component of the French education system. One of its aims is to help students to develop digital citizenship through critical thinking skills. EMI is not linked to any particular school subject, and is integrated into all of them. While the institution calls for collective coherence without providing the usual tools (curricula, textbooks, programms), the EMI is unevenly invested by teachers through a heterogeneity of practices. Based on ongoing research into the motivations of some middle and high school teachers involved in the EMI, the aim of this study is to determine whether the absence of textbooks and curricula leads teachers to take advantage of institutional online support resources (mainly in the form of teaching scenarios and practical tools sheets) (Aillerie et Rakotomalala Harisoa, 2020). The hypothesis is that, in a pedagogical environment built around an active approach, learning by doing takes precedence over understanding, and does not trigger the need to resort to educational resources. Therefore, teachers would prefer to use the autonomy allowed by the weak institutional framework to create their own resources, thus reinforcing their professionnal singularity and practising their pedagogical expertise.

In view of the individual dimension of this commitment, we opted for a comprehensive approach based on individual semi-directive interviews with 18 secondary school teachers from different school subjects. Analysis based on their accounts of their experiences and on their perceptions of the EMI enables us to identify the kind of documents used in the teaching situations described, in relation to the respondents' motivations.

According to the interviewees, the EMI is defined by its goals. Current institutional support resources are little-known and little-used. EMI is based on an active approach through publication or problem-solving situations. The activity sometimes takes a lead over the pedagogical objective and become self-sufficient. None of the respondents regretted the absence of reference supports or a specific program. They prefer to rely on " real " media publications (primary documents), with three objectives: to show that their field has a link with currents events ; that the course's knowledge content is useful for understanding the surrounding world ; and to get students to improve their critical thinking skills through real-life situations. Using medias' current matter also means that teaching materials (and teaching situations) are constantly renewed (Dounies, 2019).

To be involved in EMI is currently to be able to construct a teaching program without the support of a curricula or textbooks, i.e. to demonstrate professional expertise in creating a singular pedagogical framework. This expertise is also expressed in the ability to select and use non-academic or non-institutional documents for teaching (intellectual meaning of the job) (Barrère, 2017). For some teachers, the outside work time devoted to this research is an argument against involvement in EMI. Without identified reference documents, the knowledge

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associated with EMI is understood and teached in different ways, sometimes leading to counterproductive teaching discourses or situations.

Ressources :

Ministère de l'Education nationale (2022). Vademecum Education aux médias et à l'information. https://eduscol.education.fr/document/33370/download

UNESCO (2023). Citoyens éduqués aux médias et à l'information : penser de manière critique, cliquer à bon escient ! Paris : UNESCO. https://unesdoc.unesco.org

References :

AILLERIE, Carine & RAKOTOMALALA HARISOA, Ny (2020). Pratiques informationnelles des enseignants : le cas des ressources institutionnelles en ligne. *Études de communication*, 54, 137-156. https://doi.org/10.4000/edc.10252

BARRERE, Anne, (2017). Au cœur des malaises enseignants. Paris : Armand Colin, 208 p. (Individu et Société). ISBN : 978-2-200-61723-3
DOUNIES, Thomas (2019). Se montrer à la hauteur. Conformation professionnelle et intégration de l'actualité dans le faisceau de tâches des enseignants d'histoire-géographie. *Carrefours de l'éducation*, 48, 57-72. https://doi.org/10.3917/cdle.048.0057

Textbooks constructing agency in the climate crisis

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Climate crisis is an urgent issue that requires immediate and significant international action and is tightly connected to several other global problems such as biodiversity loss, economic inequality, and countercurrents to democracy. Therefore, acquiring an active and agentive role in relation to the crisis is crucial on both local and global levels, as well as individual and collective. Simultaneously, according to the national core curriculum, Finnish social studies teaching should aim for active democratic citizenship.

The article analyses the construction of agency in relation to climate issues in social studies textbooks from a discursive perspective, examining the rhetoric of positioning and addressing the reader as an active agent (see Satokangas & Mikander, 2023). The data consist of four textbooks for elementary school (grades 4–6) and four for secondary school (grade 9), all in Finnish except for one for 9th grade in Swedish. We approach the data through the following research questions:

How is the climate crisis portrayed and framed for the reader?

What kind of action is represented as possible for the reader regarding climate crisis?

Working within the broad framework of critical discourse studies (e.g., Wodak & Meyer 2016), the article addresses agency – the "socioculturally mediated capacity to act" (Ahearn 2010) – by utilizing the methodological approach of textual interaction (Hoey 2001; Thompson 2012). The study of textual interaction focuses on how a reader's position, with their abilities, possibilities, alternatives, and restrictions to action, are constructed by linguistic choices. The article draws an overall image of agency regarding the climate in textbooks and examines its implications. The observations show, first, that climate is a relatively invisible theme under most societal topics, also in the chapters focusing on how an individual can influence the world. Climate crisis is addressed sporadically and mainly through individual consumption choices, reflecting a consumerist, individualistic view on active citizenship. Moreover, the reader is explicitly persuaded to see purchase decisions as a relevant way of influencing.

Based on the observations, the article discusses the position pedagogically represented for pupils in textbooks, and what conceptions of societal agency in relation to climate crises it contributes to. The perspective of textual interaction addresses a concrete level of language in shaping social imagination. Analysis of discursively constructed reader and writer positions (or readers-in-the-

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text and writers-in-the-text, Thompson & Thetela 1995) and their interplay makes visible the position in which a social studies student is placed when socialized into active citizenship. The concept of agency is operationalized to unravel the ways in which textbooks as authoritative representations of both propositional and procedural knowledge enable and constrain the imaginable actions of the reader.

Departing from the empirical analysis, the article critically reflects the role of textbooks and other teaching materials as epistemic authorities in formal education. In a fragmented textual environment, textbooks still have a unique status as curators of knowledge that are shared by large groups in a normative institutional context. Guided by this status, it is in the DNA of textbooks to present knowledge – and instructions – that represent seemingly objective, uncontroversial consensus; thereby leaving epistemic power struggles and inequalities invisible (Lee 1993). The article discusses what textbooks can, cannot, and should do on a burning planet.

The article also introduces suggestions of how climate crisis could be addressed more comprehensively and beyond individual consumption choices, through the notions of collective action, politics, and structural changes. From a discursive perspective, meanings are created in interaction, and the study investigates how textbook text makes use of its status as a forum of influential written interaction in imaging our capacity to act to stop the climate crisis.

Keywords: agency, textbooks, climate crisis, social studies, discourse

References:

Ahearn, L. (2010). Agency and language. In Jaspers, J., Verschueren, J. & Ostman, J.-O. (eds.), Society and language use (pp. 28-48). Amsterdam: John Benjamins.

Hoey, M. (2001). Textual interaction. An introduction to written discourse analysis. London: Routledge.

Lee, A. (1993). Whose Geography? A feminist-poststructuralist critique of systemic 'genre'-based accounts of literacy and curriculum. Social Semiotics 3(1), 131–156. https://doi.org/10.1080/10350339309384412

Satokangas, H. & Mikander, P. (2023). From a Welcoming Rhetoric to a Narrowing One: Constructing Citizen Agency in Finnish Social Studies Textbooks. Nordidactica 13(3), 85–108. https://journals.lub.lu.se/nordidactica/article/view/24862

Thompson, G. (2012). Intersubjectivity in newspaper editorials. Construing the reader-in-the-text. English Text Construction 5(1), 77-100. https://doi.org/10.1075/etc.5.1.05tho

Thompson, G. & Thetela, P. (1995). The sound of one hand clapping. The management of interaction in written discourse. Text 1, 103–127. https://doi.org/10.1515/text.1.1995.15.1.103

Wodak, R. & Meyer, M. (eds.) (2016) Methods of critical discourse studies. 3rd edition. Los Angeles: Sage.

Interrogating educational responses to climate crisis: Reimagining climate change education in the Anthropocene

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Research problem

Since the watershed year of youth climate activism in 2018, the field of education has witnessed a rapid proliferation of literature on climate change across its diverse subfields. Climate change education (CCE) is no longer confined to the field of science education and environmental education. A new body of literature is often motivated by a critique of much existing CCE, perceived to be inadequate to contribute to meaningful climate action. This paper interrogates proposals for reforming CCE and dissect dominant discourses pertaining to youth agency, innocence, vulnerability and anxiety and their intersections with the narratives of the 'Anthropocene'–the proposed geological epoch in which the humankind has become a dominant force shaping the Earth's systems, including its climate.

Research questions

What is invisibilised, obscured or neglected within dominant framings of climate change education? How do they undercut meaningful social responses to the climate crisis?

Methodology

We draw on (1) the typology of seven storylines of youth in climate change as "innocent, vulnerable, heroic, alarmist, inheriting, apathetic or narcissistic" by Jones et al. (2023); and (2) Durbeck's (2019) postcolonial and ecocritical assessment of five narratives of the Anthropocene: (i) the *disaster narrative*, which holds all of humanity universally responsible for bringing about environmental crises; (ii) the *court narrative*, which blames the Global North and the neoliberal socioeconomic system for causing climate crisis; (iii) the *Great Transformation narrative*, which calls for combining efforts to mitigate and adapt to climate change; (iv) *the (bio-)technological narrative*, which advocates intensive technocratic interventions such as geoengineering; and (v) the reflexively oriented *interdependency narrative of nature-culture*, which presents the Anthropocene as an opportunity to rethink mankind from a posthumanist perspective.

By analysing where different proposals for reforming CCE fit in the youth storylines of youth and the Anthropocene narratives, we identify the inadequacies of mainstream CCE and also problematize the core assumptions held by critics of mainstream approaches.

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Results

Our analysis found that critical CCE literature points broadly to four different types of the perceived inadequacy of mainstream CCE: (i) the narrow and depoliticized notion of education as individual competency building, (ii) the privileging of a behavioural science framework, (iii) mainstream (white) environmentalism, and (iv) modern schooling in service of a capitalist social order.

Firstly, the positioning of children and youth as "agents of change" tends to be highly limited and individualized; children and young people are often encouraged to *change themselves*, their own skillsets, attitudes and behaviours, rather than transforming dominant structural forces and cultural ideologies that hinder meaningful responses to climate change. Secondly, the predominance of a behavioural science framework in CCE focusing on fostering pro-environmental behaviour change has led to inadequate attention paid to participatory, interdisciplinary, creative, and justice-driven approaches. There are fundamental tensions between individuating psychological and behaviourist approaches to climate anxiety and critical approaches that interrogate ideologies and institutions driving climate change. The former approach bolsters a misguided pedagogical preoccupation with fostering 'hope', 'optimism', 'resilience' and 'antifragility' among children and youth.

Thirdly, white supremacist environmental saviourism underlie much mainstream CCE. Solutions-oriented CCE reduces climate change to a technical problem to be 'solved' while sustaining the underlying system. Finally, the fourth inadequacy emerges from the nature of formal education itself. CCE is confronted with two irreconcilable demands: a new demand for integrating climate change in curriculum (and other aspects of formal education) on one hand, and an unchanging demand for equipping youth with 'relevant' skills, allowing them to secure employment, and achieve 'success' in terms of material consumption on the other. There is a dearth of CCE literature which engages with more uncomfortable realities about children and youths' sometimes profound implication in ecological breakdown, at least within consumer capitalist societies where their sense of belonging is largely mediated through material goods and experiences.

Discontent with mainstream CCE has led to proposals that emphasize the role of education in allowing children/young people to dissent and contest the dominant institutions and ideologies that serve to perpetuate the neoliberal-capitalist social order. But fostering political agency alone is not sufficient for developing meaningful social responses to the climate crisis. Along the lines of the *interdependency narrative* of the Anthropocene, we also need to explore ways to move beyond anthropocentrism, human exceptionalism, and methodological individualism that underpin public discourses on young people and climate change.

References

Jones, C.A., Davison, A., & Lucas, C.H. (2023). Innocent heroes or self-absorbed alarmists? A thematic review of the variety and effects of storylines about young people in climate change discourses. WIREs Climate Change. 2023;e853. https://doi.org/10.1002/wcc.853

Dürbeck, G. (2019). Narratives of the Anthropocene: From the perspective of postcolonial ecocriticism and environmental humanities. In Monika Albrecht (Ed.), Postcolonialism Cross-Examined: Multidirectional Perspectives on Imperial and Colonial Pasts and the Neocolonial Present, pp. 271-288. London: Routledge.

"Epoch booklets" as open or closed - a study of two Norwegian textbooks from the 1940s

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"Epoch booklets" as open or closed – progressive education, citizenship education and history education in two Norwegian textbooks from the 1940s

Keywords: Progressive education, textbooks, history education, citizen education

In 1935, a new school act for Norwegian secondary schools was passed. A committee, named the plan committee, was set up to prepare the implementation of the school act and the drafting of new curricula. A central goal was introducing principles of *arbeidsskole* (working school/activity school). This term was used in a wide sense about more student-centred and active education. The committee argued that history was one of the subjects most in need of change. A main problem was the large amount of material that the students were supposed to learn. The committee supported suggestions about introducing "epoch reading" in upper secondary schools (gymnasia) (KUD, 1938). "Epoch reading" was introduced in the new temporary curriculum of 1940. This involved choosing certain time periods in world history before 1815 for in-depth study. "Epoch booklets" were written to accommodate this. What characterized these booklets and to what degree did they follow the ambitions of more student-centred and active education?

This paper focuses on two such epoch booklets, written in the beginning of the 1940s by two history teachers, Bjarne Svare (1897–1973) and Tønnes Sirevåg (1909–1994). Svare and Sirevåg had worked together as teachers at Eidsvoll rural gymnasium between 1936 and 1939, and they corresponded about history education. They critically reviewed each other's booklets, and they wrote several articles about history education in which discussions of epoch reading were included.

The paper aims to answer the following question: How can these two Norwegian "epoch booklets", published in the 1940s, be characterized in relation to ideals of progressive education? As in many other countries, Norwegian school debate and school policy were influenced by movements of progressive education in the first half of the twentieth century. Progressive education is a very complex phenomenon, containing pedagogical and political tensions and contradictions. However, these ideas often involved using more diverse educational resources, more emphasis on student activity, and stronger connections to society and the students' lives (Cuban, 1993; Tisdall, 2019). To what extent did the epoch booklets provide opportunities for variety, activity, and connections to society and the students' lives?

The booklets were analysed with special attention given to introductions, illustrations, tasks and reference to literature and other resources. A thorough reading of other relevant texts written by the two teachers was also done, as well as a study of their background and of the educational context (Mork, 2023; Mork, forthcoming).

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[*]Speaker

The results show that although Svare and Sirevåg shared certain pedagogical ideas and ideas about the importance of history education for democracy, their booklets were very different. Svare's encyclopaedic approach, which is also evident in other of his writings, resulted in a far more "closed" textbook with no references to literature or additional resources, and with no tasks for the students. Sirevåg's book, on the other hand, is far more open in the sense that it refers to numerous sources and resources outside the textbook (journal articles, city archives, museums, literature etc.). The booklet, which is about cities and city culture in the Middle Ages, also has tasks that connect to contemporary society, such as finding out the population of cities today and how trade and transport have developed in ones' region.

The paper can be linked to reflections on two important topics for the conference: societal change and critical thinking. Developments in history education and textbooks should be seen in light of societal changes, although one should also be aware of certain recurring tensions. The presentation will also relate to a larger study of the meeting between ideas of progressive education and history education in the writings of these two teachers and two of their colleagues (Mork, forthcoming), and touch upon tensions and connections between progressive citizenship education and subject education more generally.

Bibliography

Cuban, L. (1993). *How Teachers Taught: Constancy and Change in American Classrooms 1890–1990. 2nd. ed.* Teachers College.

KUD. (1938). *Innstilling II fra Plankomiteen for den nye skoleordning.*
https://doi.org/oai:nb.bibsys.no:999800474984702202

Mork, A. H. H. (2023). The why, what, and how, of history education in Norwegian and Swedish history curricula for upper secondary schools (approximately 1920–1960). *Scandinavian journal of history*, 1-23. https://doi.org/10.1080/03468755.2023.2258144

Mork, A.H.H (forthcoming). Reformpedagogy meets history education in the writings of four Norwegian gymnasium teachers (1917–1954).

Tisdall, L. (2019). *Progressive education?: How childhood changed in mid-twentieth-century English and Welsh schools.* United Kingdom: Manchester University Press.

Keywords: Progressive education, textbooks, history, citizenship education

Knock Knock, Who's There? Teacher Identity in the Design of Learning Material on Academic Writing for Higher Education Students in the Era of Artificial Intelligence

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The advent of Artificial Intelligence (AI) has brought about significant changes in academic writing, with the learning process and the role of the instructor undergoing profound transformations. This study seeks to uncover how AI's integration into academic writing is affecting individual expression, voice, and the epistemological aspects of the writing/thinking process. The research question we pose is: "In the era of AI, how can we guide the writing instructors of the future, when the act of writing can be performed by machines?"

Research Problem and Research Questions:

The advent of Artificial Intelligence (AI) has brought about significant changes in academic writing, with the learning process and the role of the instructor undergoing profound transformations. This study seeks to uncover how AI's integration into academic writing is affecting individual expression, voice, and the epistemological aspects of the writing/thinking process. The research question we pose is: "In the era of AI, how can we guide the writing instructors of the future, when the act of writing can be performed by machines?"

Methodology and Relevance:

Our study follows a longitudinal design, examining the academic writing experiences and reflections of two pairs of students at three points in their lives: in their final high school year in 2019, as students of higher education in 2023, and following the advent of AI in 2024. In-depth interviews, inspired by Interpretative Phenomenological Analysis (IPA), were conducted to gain a nuanced understanding of the participants' lived experiences and reflections.

Data and Analysis:

Interviews were subjected to thematic analysis, identifying patterns of thoughts and experiences across the dataset. The data was coded with regards to how the participants have been prepared for life and academic writing in higher education in an uncertain future, and presented back to them in the form of a model, which was then discussed with them.

Results:

Preliminary results indicate a significant shift in participant's academic writing experiences and their perceptions of their identities as writers. While AI has enhanced efficiency and accuracy, it

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also presents challenges to creative self-expression, the sense of advocacy, and the epistemological aspects of writing and thinking processes. These findings have crucial implications for the design of learning material for teacher students, the writing instructors of the future, suggesting strategies are needed that maintain creative expression, critical thinking, embodiment and individual voice in an AI-dominated academic landscape. The model which was the result of the analysis may serve as a tool for further discussions of how teacher identity may be understood and developed in an age of AI.

References:

- Brinkmann, S. (2014). Doing Without Data. Qualitative Inquiry, 20(6), 720-725.

- Creely, E. (2023). Conceiving Creativity and Learning in a World of Artificial Intelligence: A Thinking Model. In D. Henriksen & P. Mishra (Eds.), (Vol. 7, pp. 35-50). Switzerland: Springer International Publishing AG.

- Henriksen, D., & Mishra, P. (2023). Creative provocations: speculations on the future of creativity, technology and learning (1st ed. 2022. ed.). Springer.

- Polkinghorne, D. E. (1992). Postmodern epistemology of practice. In S. Kvale (Ed.), Psychology and postmodernism Inquiries in social construction. Sage Publications.
- Rogers, C. R., & Freiberg, H. J. (1994). Freedom to learn (3rd ed. ed.). Charles E. Merrill.

Learning materials and learning resources in the classroom: Developing learning resources for teacher students and educators.

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The starting point of this paper is a didactic development project at the University of South-Eastern Norway, funded by the Norwegian Directorate for Higher Education and Skills (2022-2024). The project is titled "Learning materials and learning resources in the classroom at the secondary level" (LærUng) and is a project that aims at developing digital learning resources that can be applied in teacher education and in further education for teachers. The learning resources concern how teachers reflect on and apply learning materials and learning resources in secondary school.

Today, teacher's reflections on and their practical use of educational materials are characterized by complexity, diversity, and rapid changes. Teachers daily face choices that require insight and understanding of how different learning resources can be applied in their classrooms. The consequences of the Covid-19 pandemic, where remote learning and digital instruction often replaced in-person teaching, have highlighted the need for enhanced and explicit competence in how to use a variety of learning materials and resources. This need is also underscored in international research (Gouëdard, Pont & Vienet, 2020; Reimers & Sleicher, 2020; Gissel & Hansen, 2021).

In many Norwegian classrooms, teachers apply both analog and digital materials. They apply materials that are already 'didacticised', such as textbooks and educational portals, as well as 'semantic' learning materials such as literature and films. (On the different classifications, see for example Bundsgaard & Hansen, 2011). The teachers' professional judgement is of crucial importance in their use of learning materials, and this judgement is related to changes in the curriculum and the quality of the learning materials that they have access to (Christensen et.al, 2023). Teacher education institutions need to provide teachers and teacher students with qualifications that strengthen their abilities to make informed and competent decisions in their daily professional practices. In the LærUng-project we explore how we can develop professional skills regarding the use of educational materials. However, it is crucial that the training is profession-oriented and practical, with courses developed in close collaboration with both the field of practice (schools and school owners) and students in teacher education.

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To meet this need and contribute in making teacher education more relevant for practice in schools, we have collaborated with teachers from two secondary schools in Norway in developing digital learning resources regarding the practical use and reflections on learning materials. These resources include videos from authentic classroom situations in the subjects of Norwegian (L1), social studies and natural sciences. We also sought instruction that addresses the three interdisciplinary cross-curricular topics; Health and life skills, Sustainable Development and Democracy and Citizenship. These themes are anchored in the Norwegian curriculum and are to be integrated into school subjects (Ministry of Education and Research, 2017). The learning resources that we develop will be piloted in teacher education programs at the University of South-Eastern Norway this spring. Furthermore, we will evaluate the resources and collect data to develop further knowledge on how teacher education can provide the students with knowledge and competence on the use of learning materials in their future daily practices as teachers. We will particularly focus on students' reflections on the use of learning resources (analogue and digital) in classroom situations. We will present results from the students' evaluations at the conference, as well as show examples of the digital learning resources.

Bundsgaard, J. & Hansen, T.I. (2011). Evaluation of learning materials: A holistic framework. *Journal of Learning Design*, 4(4), 31–44. http://dx.doi.org/10.5204/jld.v4i4.87

Christensen, A. S., Mortensen-Buan, A.-B. ., Nordberg, K., & Roos, M. . (2023). Teachers' judgement, learning materials and curriculum: Navigating in a changing educational landscape. *IARTEM E-Journal*, 15(2), 1–13. https://doi.org/10.21344/iartem.v15i2.981

Gissel, S. T. & Hansen, T. I. (2021). Learning materials between didactic potential and control. In Roos, M, Berge, K. L., Edgren, H., Hiidenmaa, P. & Matthisen, C. (Eds.). *Exploring Nordic Education*. Brill l Sense.

Gouëdard, P., Pont, B. & Viennet, R. (2020). Education responses to COVID-19: shaping an implementation strategy. *OECD Education Working Papers*, No. 224. https://doi.org/10.1787/8e95f977-en

Ministry of Education and Research. (2017). Core curriculum: values and principles for primary and secondary education. The National curriculum for the Knowledge Promotion 2020. https://www.regjeringen.no/contentassets/53d21ea2bc3a4202b86b83cfe82da93e/core-curriculum.pdf

Reimers, F. M., & Schleicher, A. (2020). A framework to guide an education response to the COVID-19 Pandemic of 2020. https://globaled.gse.harvard.edu/files/geii/files/framework guide update1 0.pdf

Transcending Boundaries: Educational Material Trade between East and West Germany

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This presentation explores the dynamics of the relationship between textbook publishing houses in the former German Democratic Republic (GDR) and the Federal Republic of Germany (FRG). The study, in its nascent stage, aims to elucidate the factors that facilitated this interplay. It sheds light on this connection, with a specific focus on the post-1960s era. The research, currently in its early phases, employs a comprehensive analysis, not only reviewing relevant literature from both East and West Germany but also scrutinizing internal correspondences and reports sourced from a state-owned textbook publisher in East Germany.

In the GDR, the state retained ownership of textbook production, with exclusive publishing responsibilities entrusted to *Volks und Wissen Verlag*. Established in 1946, this publishing entity was specifically designated for textbook production, serving as the sole authority in this domain throughout the existence of the GDR. Furthermore, it housed an independent research department, engaging in scholarly inquiries on educational materials through close collaborations with universities and pedagogical colleges. Despite being among the largest publishers in the GDR, *Volk und Wissen Verlag* has received limited attention in historical research, particularly with a focus on the publisher itself. Exceptions to this limited research landscape are found in the works of Links (2013) and Rau (2023), which serve as notable references, providing valuable insights into the historical overview of this publishing house.

Volk und Wissen Verlag formally prioritized its affiliations with publishing houses in other socialist nations. Simultaneously, the strategic exportation of educational materials to the West German market became a crucial source of revenue for *Volk und Wissen Verlag*, as pointed out by Rau (2023), despite political and economic disparities between the two regions. Internal correspondences and reports housed in *the Federal Archives in Germany* indicate how the publishing house actively cultivated connections with counterparts in West Germany, seizing opportunities such as book fairs in Frankfurt and Leipzig, as well as the educational fair, *didacta*. Textbook publishers in both East and West occasionally exchanged educational materials from their own publications.

Moreover, licenses for the publication of specific educational materials from *Volk und Wissen Verlag* were granted to West German publishing houses, including *Harri Deutsch*, *Aulis*, *Klett*, and *Cornelsen*. Many of the publications, for which copyright was transferred from the publishing house, were educational materials for the natural sciences. The reading primer from *Volk und Wissen Verlag* also gained recognition in West Germany, particularly for its aesthetic book design. In the 1980s, *Volk und Wissen Verlag* even developed educational materials suitable for publication in the West due to a shortage of titles appropriate for exportation to this region.

Following the collapse of East Germany, *Volks und Wissen Verlag* was integrated into the major

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[*]Speaker

textbook publishing house *Cornelsen* as one of its divisions in 1991 and continues to publish textbooks for the new federal states.

This research contributes to the understanding of the historical interplay within the publishing industry in a divided Germany. Furthermore, the study posits the potential for educational materials to serve as a bridge, fostering connections even within a society marked by divisions.

References

Links, Christoph (2013), *Das Schicksal der DDR-Verlage : Die Privatisierung und ihre Konsequenzen.* Berlin : Ch. Links Verlag
Rau, Christian (2023), "Schulbuchverlag Volk und Wissen", Links, Christoph / Lokatis, Siegfried / Saur, Klaus G.(Hrsg.), *Geschichte des deutschen Buchhandels im 19. und 20. Jahrhundert. Band 5: Deutsche Demokratische Republik. Teil 2: Verlage 2.* Berlin/Boston : De Gruyter, pp.71-89

INSTRUMENTAL GENESIS OF THE DIGITAL EDUCATIONAL RESOURCE (DEG) "FUNÇÃO RESGATE"

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This work forms part of a larger research project aimed at describing and analyzing the instrumental genesis of mathematics and science teachers in relation to Digital Educational Resources (DER). Specifically, we focus on the DER named *Função Resgate* (Gomes et. al., 2022), a video game developed by the V-Lab-UFPE team in Brazil. This team has created a suite of DERs in mathematics and sciences to align with the National Common Curricular Base (BNCC). The DER is designed to assist students/players in developing specific skills, such as analyzing functions from their algebraic and graphical representations, and encouraging the use of the characteristic parameters of a given function.

Two fundamental aspects of the DER, and particularly of *Função Resgate*, are considered: the didactic aspects, which pertains to the game and its role in structuring teaching, and the characteristics of the DER as educational software. The research is theoretically grounded in the Instrumental Approach of Didactics (Rabardel, 1995), which was developed within the field of Professional Didactics (Pastré, Mayen, and Vergnaud, 2006). This approach is used to analyze and understand how an individual using an artifact in a work situation constructs a usage scheme (Vergnaud, 2013), such that the combination of artifact and scheme forms an instrument.

The research methodology comprises three stages: initially, a questionnaire is used to investigate how teachers impart the school knowledge associated with the resource. Subsequently, the teachers interact with the DER, after which a second questionnaire is administered to assess its potential, advantages, and disadvantages. At this stage, semi-structured interviews are also conducted with selected teachers to supplement the collected information. In the final stage, the teachers design a lesson incorporating the resource and implement it in the classroom. This phase involves documenting the process of lesson conception, its execution, and conducting an interview with the teacher before and after the resource is used. The results of the first two stages are presented here.

The study involved 36 practicing mathematics teachers from various provinces and regions of Argentina, who were intentionally selected. The questionnaires, designed and validated by Gazzola and Otero (2023), first explore which functions the teachers teach, how they do so, and what resources they use. The teachers then played the game, progressing through all levels, before answering the second questionnaire, which evaluates the DER and asks whether they would use it when teaching functions. To triangulate the data, four teachers were intentionally selected for

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*Speaker

semi-structured interviews, which focused on the following areas: the typical approach to teaching functions and the relevant knowledge; the potential use of the game for teaching functions and how knowledge is addressed in the DER; and the advantages and disadvantages of the game in relation to knowledge and its application in the classroom. The transcripts were generated using software and were subsequently reviewed by the researchers.

Preliminary Results

The findings highlight the relation between the conventional method of teaching functions and the teachers' assessment of the Digital Educational Resource (DER) as a tool. The teaching of functions typically begins with the teacher's explanations, followed by a sequence that involves defining from a formula, deriving a graphical representation, and identifying certain notable points that are ostensively justified from it. This approach appears to reduce mathematical knowledge to its predicative form, neglecting its operational aspects. This epistemological perspective, coupled with the entrenched method of teaching functions, leads to teachers expressing certain unfavourable views on the use of the DER as a teaching tool and the potential mathematical activities it could facilitate. Teachers exhibit reluctance and encounter difficulties in utilizing the DER, indicating they would only employ it for student exercises. This aligns with an ideology that implicitly contrasts mathematics with creativity, art, and the enjoyment of gameplay.

References

Gazzola, M.P & Otero, M. R. (2023). Recurso Educativo Digital (DER) para enseñar funciones en la escuela secundaria: opiniones de los profesores. **Revista Iberoamericana de Tecnología en Educación y Educación en Tecnología**, n.º 35, p. e5.

Gomes, A. S. et al. **Função Resgate**. Plataforma Integrada do MEC: Governo do Brasil, 2021. (online). Disponível em: https://plataformaintegrada.mec.gov.br/recurso/358857. Acesso em: 21 dec. 2023.

Pastre P., Mayen P. & Vergnaud, G. (2006) La didactique professionnelle. **Revue française de pedagogie**, vol. 154, p. 145-198, https://doi.org/10.4000/rfp.157.

Rabardel, P. (1995) **Les hommes et les technologies, approche cognitive des instruments contemporains**. Paris : Armand Colin, 1995.
Vergnaud, G. (2013). Pourquoi la théorie des champs conceptuels ? **Infancia y Aprendizaje**, vol. 36, no. 2, p. 131-161.

EDUCATIONAL WEBSITES TO TEACH RELATIVISTIC DYNAMICS AT HIGH SCHOOL AND INTRODUCTORY UNIVERSITY LEVEL

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Research problem and questions

Considering didactic transposition, the process of transforming academic knowledge into taught knowledge (Chevallard, 1985) occurs both when textbooks or other types of didactic devices, such as websites, are created. In the digital society, students and teachers increasingly turn to Internet 4.0, where they find educational websites. However, the knowledge transformations in question are not evident for the various agents of transposition, nor for teachers and students as users. Particularly in the area of teaching Special Relativity in high school and introductory college courses, great efforts are made to introduce basic notions of relativistic dynamics, but, for example, students still do not understand the meaning, the origin and usefulness of one of the most famous and socially disseminated equations of relativistic physics as E= mc2.

This work is part of a larger investigation, which aims to teach relativistic kinematics and dynamics in the last year of secondary school. In a previous work, we analyzed how textbooks used in high school and introductory university courses propose the central notions of relativistic dynamics (González, et. al., 2022). Here, we present a research whose objective is to analyze how the notions of relativistic dynamics are proposed in educational websites and the transformations that are made to knowledge. This work addresses the following research questions:

- What are the notions of relativistic dynamics proposed on websites for high school and introductory college courses, and what are their differences?

- What similarities and differences exist with respect to the knowledge that the textbooks propose for both levels?

- What are the implications for teaching the Theory of Special Relativity?

Methodology

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From an exhaustive search on the Internet, 15 educational sites/web pages related to the teaching of relativistic dynamics were selected. The sites were analyzed using an inductive categorization, based on nominal variables and their respective modalities that arise from the considered corpus. As the analysis focuses on the transformations of knowledge, some of these variables coincide with those identified in the previous analysis focused on textbooks (González, et. al., 2022), allowing us to describe the similarities and differences between websites and the textbooks considered.

Data Analysis

16 nominal variables were identified that refer to three metacategories related to websites. The first is *general characteristics* such as the educational level they are aimed at, the type of resource, the institution of the authors, navigability, images, the use of simulations and videos. The second is *the transformations of knowledge*: the relationship with the treatment of knowledge carried out by websites, the "gateway" to relativistic dynamics, the foundation of the need to question and review classical dynamics to introduce relativistic dynamics, the role of the study of collisions, the importance attributed to experiments and the consequences of relativistic dynamics. The third *is the reformulation of concepts* like Momentum, Mass and Energy according to the Theory of Special Relativity.

Preliminary Results

The results show that websites developed by educational institutions adopt an approach similar to that of textbooks (González, et. al., 2022). This would be because traditionally academic knowledge is fundamentally based on certain canonical textbooks in physics. On the contrary, sites not linked to a specific institution deviate from the usual treatment of physics texts. In general, two major gateways to relativistic dynamics can be distinguished. In the secondary school-oriented sites, the classical concepts of Mass and Energy are introduced, questioning the validity of Newton's laws in the relativistic limit. Alternatively, sites aimed at university students predominantly use the notion of Momentum and the principles of conservation of Momentum and Energy. This result is similar to that obtained in the analysis of textbooks (ibid). Although the latter approach is epistemologically more solid, didactically it is not suitable for the secondary level because it requires previously studying the classic shocks that, although they are in the curriculum, are not taught.

Regardless of the educational level at which they are oriented, for the most part, the sites have few empirical references and applications such as nuclear reactions and nuclear energy. It is notable that only two secondary school sites propose simulations and only one university site uses videos, which may be a consequence of insufficient research in teaching relativistic dynamics.

References

Boublil, S., Blair, D., & Treagust, D.F. (2023). Design and Implementation of an Einsteinian Energy Learning Module. *Int J of Sci and Math Educ.* https://doi.org/10.1007/s10763-022-10348-

Chevallard, Y. (1985). La transposition didactique. Du savoir savant au savoir eneigné. *Grenoble: La pensée Sauvage.*

González, R., Otero, M. R., & Arlego, M. (2022). Análisis del enfoque de la dinámica relativista en los libros de texto de secundaria y la universidad. *Revista de Enseñanza de la Física*, 34, 211–219. Recovered from:https://revistas.unc.edu.ar/index.php/revistaEF/article/view/39833

Otero, M. R., Arlego, M., Prodanoff, F. (2016). Teaching the basic concepts of the Special Relativity in the secondary school in the framework of the Theory of Conceptual Fields of Vergnaud. *Il Nuovo Cimento 38 C*, DOI: 10.1393/ncc/i2015-15108-0.

DIGITAL EDUCATIONAL RESOURCES FOR TEACHING CHEMISTRY AND PHYSICAL CHEMISTRY IN SECONDARY SCHOOL

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This work analyzes Digital Educational Resources (DER) designed for teaching physical chemistry and chemistry at the secondary and higher levels. DERs are digital resources that facilitate and support the teacher's work. When the teacher incorporates them into their practice with the explicit intention of teaching, these resources become didactic.

Two DERs have been selected: *RadioLab* and *pHPuzzle*, designed and developed by the V-Lab-UFPE team in Brazil (Gomes, A. S. et al., 2021). These are free to distribute and can be used on mobile devices with or without internet. They are educational games for teaching/studying physical chemistry and chemistry that are linked to environmental problems. The DER *pH-Puzzle* promotes interest in the concepts of chemical equilibrium: acid-base balance, pH and pOH, scales, indicators, dilution, and the neutralization of solutions for safe disposal. The game underscores the importance of caring for the environment by correctly discarding the solutions involved in it. The DER called *RadioLab* aims to engage the student in learning situations that allow them to establish relationships with everyday situations linked to the use of ionizing radiation (from the treatment of diseases and the sterilization of food and materials to the generation of energy). The content involved in this game includes: radioactivity; nature of radiation; half-life of a radioactive substance; radioactive waste; shielding of radioactive sources, which could be linked to situations of nuclear medicine, radiotherapy, radiodiagnosis, contamination, and environmental care.

The research adopts Adler's (2000) notion of a resource, according to which a resource is anything that serves to support the work of teachers in interacting with students. The notions linked to the Theory of Didactic Transposition (Chevallard, 1985) allow us to analyze the transpositive aspects related to the design, use, and operation of DERs, in addition to some didactic advantages and disadvantages that they present (Otero et. al, 2022).

The DERs were analyzed by adapting the categories proposed by Queiros, et al. (2022). Here we are interested in the didactic aspects, which are closely linked to the notions of chemistry and physical chemistry that can be taught with these resources. It analyzes: the integration of game-student knowledge, the use of school chemical and physical chemical concepts involved

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*Speaker

during the game, whether or not curiosity about the content is promoted, and the adequacy of these contents with the school curriculum. To a lesser extent, we consider some aspects related to gameplay, applicability, user experience, and also the design and visual representation of the resource.

Preliminary results

From the analysis carried out, it is concluded that, unlike the games mostly available on the Internet that attribute relatively little importance to knowledge, these resources use relevant and fundamental school concepts of chemistry and physical chemistry. These resources call for the study of the theories underlying the knowledge involved, especially if these theories are studied in the classroom with the help of the teacher. The analysis also shows the relevance of these resources for addressing issues related to the environment and its care, mainly with regard to the generation of environmental awareness. In the case of the *pHPuzzle*, the student is encouraged to discard solutions with a neutral pH, preventing them from reacting violently in order to preserve the environment, and in the *RadioLab*, the substances are discarded after being introduced into shielding boxes that have been designed to contain the ionizing radiation and avoid the damage caused by radioactive emissions.

The mediation present in the conception and design of the RED is complemented by the teacher's mediation, both in the choice of the resource and, for example, in the preparation of the laboratory work, the choice of the materials available to carry it out, the direction of the studio, etc.

Referencias

Adler, J. (2000). Conceptualising resources as a theme for teacher education. Journal of Mathematics Teacher Education, 3: 205-224. https://doi.org/10.1023/A:1009903206236

Chevallard, Y. (1985). La transposition didactique : du savoir savant au savoir enseigne, Grenoble : La Pensee Sauvage (2e ed.1991). (Traducida al espanol: Chevallard Y (1997) La transposicion didactica. Del saber sabio al saber ensenado. AIQUE, Buenos Aires)

Gomes, A. S. et al. (2021). **Função Resgate**. Plataforma Integrada do MEC: Governo do Brasil, (online).Disponível em:https://plataformaintegrada.mec.gov.br/recurso/358857. Acesso em: 21 dec. 2023.

Queiros, L. M., Gomes, A. S., Pereira, J. W., Castro Filho, J. A. de, Santos, E. M. dos, & Silva Neto, D. F. da. (2022). Enigmas de Yucatàn: Recurso Educacional Digital para o Ensino de Geometria Espacial. Revista Brasileira de Informatica na Educaçao, 30, 108-134. DOI: 10.5753/rbie.2022.2140.
Otero, P., Gazzola, M. P., Otero, M. R., & Llanos, V. C. (2022). Recursos educativos digitales para la enseñanza de las ciencias. Revista De Enseñanza De La Física, 34, 257–266.

Open Educational Resources and inclusion – mismatches of potentials and practice

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Theoretical framework

Within international educational media research, the potentials of Open Educational Resources for diverse learning groups are being explored. Due to their accessibility and adaptivity, OER are being associated with inclusion (UNESCO 2012 Paris OER Declaration). Given that inclusion is dependent on national, historical, social and political contexts and can be looked at from different angles (e.g. the social justice lense differentiating inclusion as access, participation and empowerment, Gidley & Hampson 2010) the postulate of inclusion-sensitivity will encounter divergent understandings.

This complexity coming along with reflections on inclusion is multiplied in the context of digital educational media: digital technologies pose new possibilities for inclusion-sensitivity as well as challenges in terms of barriers to participation and exclusion. Numerous stakeholders are involved in discourses about inclusion in educational media – e.g. the OER community.

Particularly the postulated intersection between OER, digitalization and inclusion-sensitivity raise the question of how well-founded the affiliation between OER and inclusion really is or can be. Merely postulating openness in educational media and OER as conducive to participation and inclusion could even obscure social inequalities (Otto & Kerres 2022). Given these tensions, it is important to clarify how inclusion is commonly understood in the context of OER. Of particular influence regarding a common understanding are OER providers. They are defined as stakeholders who publish and distribute OER on digital repositories, therefore serving as an access point to assessing understandings of inclusion in the OER movement.

Based on these thoughts this paper poses the following question: What are the understandings of inclusion of OER providers?

Methodology

The research question is being approached qualitatively. In order to be able to adequately approach the intersection of inclusion and OER, the focus was on interview partners whose

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repositories distribute openly available school learning materials. Preference was given to platforms that made the connection to open education and OER explicit. The body of data consists of 4 guideline-based interviews with OER providers from Germany, Czech Republic, Sweden & Luxembourg focusing on the perceived potentials of OER, inclusion and digitality. (MP1) Data was gathered in the context of the digiLLM project focusing on digital inclusion-sensitive teaching and learning materials. This initial exploratory approach to the research question aims to elicit the perspectives of stakeholders involved in publishing and distributing OER. For the analysis, the abductive thematic analysis according to Thompson (2022) was used. The inductive analysis captures how the respondents involved with OER think about inclusion. This perspective was complemented by an analysis with deductive categories, which were generated from the theory surrounding OER and scientific literature on the connection between open education, open educational resources and inclusion. Taking into account both the perspectives extracted from the data material as well as assumptions and understandings about inclusion in the context of OER allowed to conceptually explain the findings and identify gaps between potentials and practice.

The comparison of the data sets envisaged in the abductive thematic analysis was undertaken as an international comparison (Waterkamp 2006) in order to evaluate on how OER communities deal with inclusion issues at a transnational level. This was done in order to do justice to the different national perspectives on the issue of OER.

Preliminary results & Outlook

Preliminary results show that providers particularly refer to the adaptivity of digital material in connection with inclusion. This relates to the level of inclusion as both access in the sense of redistributive justice and participation in the sense of recognitive justice. Other levels of inclusion in the context of OER, such as the content level, the initial design of the materials and aspects of empowerment or participation (as is the case, for example, in the context of open educational practices), could not be extracted from the data. Nevertheless, they are listed as equally important in the academic discussion about the inclusivity of OER.

Against the background of a social justice perspective on inclusion, a mismatch can be identified between theoretically postulated potentials and those perceived in practice. If digital educational media is recognized as having inherent inclusive potential despite these limitations, this may be due to technological determinism (the assumption of initiating inclusion through technical solutions).
As an outlook, the question is raised as to whether technological determinism might hinder the inclusivity of educational media – and how this can be counteracted.

Depoliticization of the problem and privatization of guilt - the issues related to environmental disaster in English textbooks

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The study is focused on examining the content English language textbooks and the main research question (How is the issue of responsibility for global problems related to threats to the natural environment presented in the textbooks?) was accompanied by detailed questions related to the image of causes, symptoms and solutions of the environmental problems depicted on the pages of the textbooks. For the analysis I selected 22 textbooks at the intermediate level, published by various, leading publishers on the textbook market in Europe. Texts containing more than 50 words were qualified for analysis and the research sample in the study consisted of 153 texts related to environmental issues. The choice of textbooks for learning English was primarily due to the popularity of this language and, therefore, the textbooks, but also their perceived political neutrality and ideological "innocence".
Methodology of the research was based on content analysis and Critical Discourse Analysis (CDA). Content analysis, with the application of the coding system proposed by Saldaña (2013), allowed for organizing of the research material. In the first cycle of coding, initial list of codes, rooted in the research questions, was used to categorize the data. The second coding cycle meant combining fragmented data, reorganizing them, grouping similar codes, reducing their number, identifying dominant codes and selecting representative examples illustrating a given analytical category. The next stage of coding involved assigning codes derived from CDA. In this phase, I coded individual fragments taking into account discursive strategies present at various levels of the examined content: thematic, grammatical, lexical and compositional. The thematic level of analysis included both quantitative and qualitative research. The quantitative study allowed for the specification of topics within causes, symptoms and solutions, while the qualitative one focused on coding specific features of the texts such as the level of their generality, vagueness indirectness and the use of presuppositions. The grammatical level of the study was intended to reveal grammatical structures of the text and the analysis at this level consisted largely in examining whether and how the agency of the described actions is expressed in a given text. For example, the presence of impersonal structures (nominalizations and passive voice) was examined. The analysis of the lexical level was focused on the vocabulary used (including euphemisms and personifications) and the compositional level of the research was concentrated on the structure of the text as a whole (Fairclough 2001; Machin and Mayr 2012; Molek-Kozakowska, 2018; van Dijk, 2006).

The study showed that the texts related to the environmental problems create a coherent message consistent with neoliberal ideology. The main tendency observed in the study is the depoliticization of the problem and the privatization of guilt and responsibility for environmental degradation. At all levels examined the individual agency is emphasized while ignoring the causes and solutions for the environmental disaster lying on the side of states and corporations, whose role in this matter is obfuscated and concealed in various ways. At the same time, the

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*Speaker

depoliticization of ecology can be seen as one of the elements of promoting the neoliberal ideology by language textbooks. In this respect, the study may be a voice in the discussion on the role of textbooks in shaping the value system of their users.

References:

Fairclough, N. (2001). *Language and Power.* Essex: Pearson Education Limited.

Machin, D., Mayr, A. (2012). *How to do Critical Discourse Analysis.* London: Sage Publication Inc.

Molek-Kozakowska, K. (2018). Popularity-Driven Science Journalism and Climate Change: A Critical Discourse Analysis of the Unsaid. *Discourse, Context & Media*, 21, 73–81, https://doi.org/10.1016/j.dcm.2017.09.013

Saldaña, J. (2013). *The Coding Manual for Qualitative Researchers.* Los Angeles: SAGE Publications Ltd.

Van Dijk, T. (2006). Critical Discourse Analysis. W D. Schiffrin, D. Tannen, H. Hamilton (eds.), *The Handbook of Discourse Analysis* (p. 352-371). Malden: Blackwell Publishing.

Controversial issues and gender inequalities in financial education: A critical look at curriculum and teaching materials

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Since 2017, high school students in Québec have been required to take a financial education (FE) course in the social studies learning area. This covers financial themes relevant to adolescents: consumption of goods and services, entering the labor market, and pursuing post-secondary education. The FE program is a modest 30 pages long, and only 50 hours are devoted to teaching it. This course is perceived by teachers as a difficult subject to tackle in the classroom, not only because of their frequent lack of training (FE content is rarely covered in pre-service and in-service training in the teaching of social studies), but also because it is not based on an explicit, familiar and isolatable reference discipline, as is the case with the teaching of history or geography (Björklund et al., 2022).

Nonetheless, to find ways to address financial issues, teachers can draw on instructional materials. However, the tasks that textbooks and workbooks suggest to students are less about taking a stand and more about finding information (Lefrançois et al., 2023). Financial issues are individual or domestic, never social, or political (Lefrançois et al., 2023). In fact, FE aims to make individuals responsible for their financial situation by focusing on the transfer of knowledge about financial concepts and products, as well as the adoption of attitudes and behaviors consistent with established standards of good financial health (Björklund et al., 2022). So how can the content of the Québec FE program contribute to the study of controversial financial issues and as an opportunity to develop the critical thinking skills of (future) citizens? What role can pedagogical resources in high school classrooms play in achieving this citizenship goal?

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How can the issue of gender inequalities serve as an example? These are some of the questions that this paper seeks to answer.

Indeed, we analyzed the Québec FE program and the teaching materials – especially the learning workbooks – used to teach it. Using IRaMuTeQ software, we produced a word cloud from the FE program to highlight the most important keywords in the program. With regard to the issue of gender inequalities, we did not analyze all the tasks included in the pedagogical resources associated with the instructional materials used in Québec classrooms. We did, however, examine those proposed in the chapter summaries of four learning workbooks offered by the main publishers of instructional materials. Contrary to the scientific FE literature, which has discussed them extensively (Lind et al., 2020; Tinghög et al., 2021), we observed the absence of content and deliberation on financial issues related to gender inequalities in these documents, but the concepts explored there (including pay equity) could provide opportunities to address such issues, as these concepts go beyond the dominant reductionism that divides FE into four operations: budgeting, saving, investing, and borrowing (Remund, 2010).

Finally, when it comes to learning to reflect and investigate, learning to think critically, and finding solutions to problems posed by students (with the help of teachers) (Éthier et al., 2021), pedagogical resources produced by publishers are not up to the task. Therefore, in an exploratory approach to content analysis, we examined, in a non-exhaustive way, other pedagogical resources in FE, online and produced by governmental and non-governmental organizations, asking whether they enable students to reflect on inequalities, causes and effects, and to take a stand on financial issues related to gender.

References

Björklund, M., Tväråna, M., Jägerskog, A. S., & Strandberg, M. (2022). Grasping the concept of value: Exploring students' economic and financial literacy in citizenship education. *Journal of Social Science Education, 21*(4). https://doi.org/10.11576/jsse-5535

Éthier, M.-A., Lefrançois, D., & Larocque, S. (2021). Les questions socialement vives et l'enseignement des sciences humaines et sociales au Québec : des visées délibératives confrontées au paradoxe curriculaire. *Carrefours de l'éducation, 52*, 115-131. https://doi.org/10.3917/cdle.052.0108

Lefrançois, D., Éthier, M.-A., Cambron-Prémont, A., & Larocque, S. (2023). Financial education as a social studies discipline: The equivocality of the critical aspirations found in Québec's curriculum and its educational materials. *Journal of Social Science Education, 22*(3). https://doi.org/10.11576/jsse-6244

Lind, T., Ahmed, A., Skagerlund, K., Strömbäck, C., Västfjäll, D., & Tinghög, G. (2020). Competence, confidence, and gender: The role of objective and subjective financial knowledge in household finance. *Journal of Family and Economic Issues, 41*, 626-638. https://doi.org/10.1007/s10834-020-09678-9

Remund, D. L. (2010). Financial literacy explicated: The case for a clearer definition in an increasingly complex economy. *Journal of Consumer Affairs, 44*(2), 276-295. https://doi.org/10.1111/j.1745-6606.2010.01169.x
Tinghög, G., Ahmed, A., Barrafrem, K., Lind, T., Skagerlund, K., & Västfjäll, D. (2021). Gender differences in financial literacy: The role of stereotype threat. *Journal of Economic Behavior and Organization, 192*, 405-416. https://doi.org/10.1016/j.jebo.2021.10.015

What if sustainability lies outside the text(book)?

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Much of the contemporary discussions about sustainability education assume that changing textbooks and knowledge as the focus. However, recent research shows that students with the highest levels of 'climate awareness' can still have the highest level of ecological footprint per capita (Komatsu et al., 2019). This suggests that the problem is much deeper than knowledge, but (un)sustainability is found in ways of being (i.e, not only ways of thinking or beliefs). In line with this, our work – both theoretical and empirical – has repeatedly advanced a 'cultural approach' (Rappleye, Komatsu, Silova, 2024). However, it remains difficult for educational researchers to grasp what this might mean, and even more difficult to move beyond one's deeply embedded cultural assumptions to see the necessity of a cultural shift in achieving sustainability and the potential of our proposal. Thus, in hopes of providing concrete illustration, this presentation looks at school food education in Japan (in Japanese: shokuiku), centered around the 2005 Basic Law on Shokuiku. Japan's shokuiku shows how schooling can be about more than "cognition, knowledge, and symbolic attainment", and a return to "food, nature, and somatic symbiosis" central to sustainability (Rappleye, Komatsu, and Nishiyama, 2024, p. 2). More philosophically, Japan's shokuiku philosophy and practice moves beyond the Cartesian mind-body split that has become the modern reinstatement of Western metaphysics. The presentation closes with a challenge to concerned scholars to go beyond the Western emphasis on cognition, rationality, and texts, and begin thinking about sustainability education in terms of pedagogies for somatic interdependence.

References

Komatsu H, Rappleye J, Silova I. (2019) Culture and the independent self: obstacles to environmental sustainability? Anthropocene 26, 100198. http://dx.doi.org/10.1016/j.ancene.2019.100198

Rappleye, J., Komatsu. H. & Nishiyama. S. (2024). School food, sustainability, and interdependence: learning from Japan's Shokuiku?, Oxford Review of Education,
https://doi.org10.1080/03054985.2023.2296097

Rappleye, J., Komatsu, H., Silova, I. (2024). Re-thinking pedagogies for climate change activism: Cognitive, behaviorist, technological, or cultural?. In: Wyn, J., Cahill, H., Cuervo, H. (eds) Handbook of Children and Youth Studies. Springer, Singapore.
https://doi.org/10.1007/978-981-4451-96-3 127-1

Keywords: culture, school food, comparison, East Asia

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THE DIGITALISATION OF MATERIALS IN COMPULSORY SECONDARY EDUCATION IN SPAIN. INITIAL RESEARCH RESULTS

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Today's society is characterised by the impact of technologies in the different areas of daily life of citizens of all ages. Education is one of the areas in which digitalisation has advanced the most in recent years, and Compulsory Secondary Education pupils are one of the age groups in which the use of different technological devices has become most widespread. Uses linked to education, inside and outside educational centres, and also to leisure. A large group of researchers from six Spanish universities located in three autonomous communities have spent the last decade analysing the selection, evaluation, use and creation of digital teaching materials at three educational stages: Pre-school, Primary and Compulsory Secondary Education. The results obtained in the Infant and Primary stages show the specificity of the introduction of digital technologies in relation to the psycho-evolutionary characteristics of the pupils and the pedagogical model underlying the practices that derive from their introduction in the classroom. The findings led to the decision to continue research at the next educational stage, for which the project Digital Teaching Materials (hereinafter DTM) in Compulsory Secondary Education. Análisis y propuestas para su uso escolar y sociofamiliar (Secundari@ Digit@l) (PID2022-13736608-100). This project pursues four fundamental objectives which will be materialised by carrying out various studies. Objective I: to analyse the pedagogical and technological characteristics of a sample of digital educational content repositories and platforms currently existing in Spain for secondary education, both commercial educational content platforms and public institutional repositories; Objective II: to identify the representations and opinions on the transition from textbooks to educational MDD by the different sectors involved: teachers, students, families and publishers; Objective III: To explore the educational use of the MDD in the classroom and its impact on the teaching and learning of all students, as well as its usefulness and suitability to cater for diversity, focusing the study on a sample of schools in the Canary Islands, Galicia and Valencia; and Objective IV: To transfer the knowledge and findings to society, through training activities aimed at different educational agents, as well as through the development and validation of a multimedia and interactive guide with recommendations for good practice on the creation and educational use of these materials. This project aims to answer questions such as: What educational materials are offered in the Spanish context for Compulsory Secondary Education, what pedagogical model underlies them, what differences exist between commercial and institutional

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platforms, what representations do the different educational and social agents involved have, how are they used and what impact do they have on teaching and learning in the classroom, and what recommendations can be made to the different agents and sectors involved to produce and use the school resources and content distributed online with educational quality? In order to answer these questions, a mixed methodological design is used, combining quantitative and qualitative methodology. The data collection instruments are designed ad hoc and validated by experts. At present, studies I and II, corresponding to the first two objectives of the research, are being carried out and, therefore, this paper will present the preliminary results regarding the analysis of materials and the perceptions of the different educational agents, as well as those of the students of Compulsory Secondary Education.

An analytical journey on the school textbook in Spain

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The textbook has been, since the end of the 16th century, the didactic material par excellence, both for teachers and students, at all educational stages.

According to Martínez-Bonafé (1995), curricular materials determine a large part of the schooling activity, playing an essential role in the planning and development of teaching and learning processes. This is why it is important and necessary for them to meet a series of technical quality criteria (image characteristics, animations, texts, sound, etc.), which, in turn, meet pedagogical quality criteria: educational purpose, degree of innovation, ease of use, suitability for the target group, didactic versatility, attention to diversity, adaptation, etc.

Thus, we are faced with constantly evolving resources that must respond to the different historical periods in terms of teaching methods and strategies, teaching role, student characteristics, educational objectives and content, but also the values and counter-values of the society of the time.

This research analyses three textbooks for the 6th year of Primary Education and Basic General Education (EGB), produced by three different Spanish publishers and used in the subject of Natural Sciences in the 1980s, 1990s and 2000s, following the legislative and social changes in the Spanish education system.

The main objective is to find out how issues related to climate change and care for the environment are addressed, as well as other aspects related to the representation of cultural, ethnic, gender and physical diversity, also studied in works such as Ayaz et al. (2016), the typology of activities, the structure of the topics, the language and the images.

For this purpose, an adaptation of the evaluation guide designed in the national R&D&I project "Escuel@ Digit@l. La escuela de la sociedad digital: análisis y propuestas para la producción y uso de los contenidos digitales educativos" (Area-Moreira, 2020) as well as other specific guides on the analysis of textbooks in printed format, among which Parcerisa (1996) stands out.

In the analysis of the books, the results point to a substantial change in the importance given to content related to climate change and care for the environment, moving, in the oldest book, from a vision focused on the impact on human life in the face of a "slow and insignificant" process of change, to a critical perspective, in the most current one, centred on the causes, consequences and activities that can be carried out to act as a society in the face of the alarming situation in which we currently find ourselves.

As for the representation of diversity, in the materials published in the 1980s, most of the images depict young, fair-skinned people, while the language reflects an androgynous vision of the contents, always mentioning "man" as a representation of the human being. It is organised

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in sequential themes, which always follow the same structure: presentation of the theme, development of the contents, activities, reading or research and, finally, concepts for a scientific vocabulary. In the most current books, the images often depict people of different ethnicity, gender and age. A more respectful and inclusive language is advocated, which, although it sometimes uses the masculine, stands out for using the first person plural, such as: our, we have, etc. In addition, the images, when they do not deal with specific content in which it is necessary to distinguish between genders, the human figure is represented in a non-binary way. The book is also structured in units, although these are more flexible, including a section on Contents and another on Techniques and Activities, which includes research projects and more transversal tasks. The aim is not only to acquire the contents passively and memoristically, but also to reflect and work on them.

Even so, it is concluded that the image of the family is still traditional and the gender perspective can still be improved in terms of professions, as pointed out by Aguasanta (2022). Finally, it would be necessary to give children a more active role in taking action to curb climate change, reduce the ecological footprint and implement the Sustainable Development Goals, deepening the representations and narratives that contribute to full integral development.

Villa-Lobos' music method: textbooks as legitimation of an educational project.

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This ongoing research aims to unveil how the Brazilian composer Heitor Villa-Lobos relied on a project of writing a series of textbooks to legitimate its nationwide Music Education project. In this theme, we want to answer the following question: what are the elements from the manualistics studies (Escolano, 2012) that can be found on the *Guia Prático* music textbooks that unveil evidences of an adjustment of a conservatorial musical model towards a regular school reality. According to those elements, the textbooks can be considered a textual genre with very specific characteristics, such as form, implicit reader, design, content hierarchy, etc. In a wider view, the textbook is a "cultural standardization device" and a "controlled cultural product". These conceptions support the manualistics as an intellectual and academic field of research. Concerning the *Guia Prático* music textbooks we assume the hypothesis that its author, as a composer depended on a recognized educational engagement in order to sustain its musical career. In this direction, the public funds that would enable its educational project could financially relieve the composer (Guérios, 2009). Thus, the creation of a series of textbook would be a solid step to sustain and legitimate his project. The empirical universe of research is a collection of the three textbooks of the *Guia Prático* (Villa-Lobos, 2009), related to the *Canto Orfeônico* music method. To analyze this material, a document analysis is the main research method. To pursuit this task analytic categories are being created such as, increasing level of difficulty of the activities, teachers' orientations, printing design, ideological content, historical references, etc. A general grid is being built in order to create a visual chart of the main characteristics of the three textbooks. The last historical revised edition of those textbooks is being studied in dialogue with the researches that sustain the comprehension of the *school form* (Vincent, Lahire, and Thin, 2001). For those French authors, the *school form* is an ensemble of characteristics that enable a non-ingenuous view of the genesis of the school as a social locus, in particular after the French Revolution. This perspective refute homogenizing perspectives of school and understands it as a specific place where knowledge is encoded, cumulated and objectified. The academic subjects are a result of the *school form*, and music can be seen as one of these subjects. Alain Chopin's (2004) categorization of the different functions that a school manual can assume (curricular, pedagogical, ideological and documental) is employed in order to bring a multifaceted panorama of those textbooks and to point out what were the didactic resources that Villa-Lobos used to emphasize the pedagogical aspects of his project. This same author is also taken as reference to sustain the assumption that those three volumes can be categorized as school textbooks, bypassing the delicate task of classifying some pedagogical music works as educational textbooks. Villa-Lobos (1887-1959) is known as one of the most important Brazilian Classical composers. He had a short international experience in Paris in the early 1920s, when this city represented a cultural capital of the world. Due to money shortage, the young composer went back to Brazil and continually worked to find financial support to next European stays. This delicate personal situation finally changed when Villa-Lobos got aligned with the Brazilian president Getúlio Vargas dictatorship (this one aligned with the European

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absolutists of that time) and encountered a financial support through a Music Education program for the masses. His main pedagogical written work was the *Guia Prático*, a series of 137 Brazilian folklore songs arranged by the composer in the mid-1930s. This educational project, called *Canto Orfeônico* included the formation of music teachers that would work in regular schools. The preliminary results of this research enable to verify a complex categorization of the music material within the three textbooks reveling the composer's concern about the choice of each song of the method. That meticulous organization can indicate an aim of Villa-Lobos to legitimate its project as an educational one. The songs are presented in an increasing level of difficulty, showing a progressive program, compatible with a classical textbook formula that goes back to the 17th century. Those preliminary aspects retrieved from this analysis show that Villa-Lobos made a considerable effort to write his Music Education method in accordance to a pedagogical model of the first half of the 20th century. Without a previous teacher formation and holding a mediocre teaching practice (Guérios, 2009), the composer needed the help of many teachers to sustain his project. The three textbooks here studied are the most visible aspect of that effort. It is also notable that this whole Music Education project was subordinated to a particular political and institutional dimension that was aligned with its historical context and structurally influenced the school culture beyond the pragmatic educational issues.

References:

Chopin, A. (2004) História dos livros e das edições didáticas: sobre o estado da arte. Educação e Pesquisa. 30 (3), 549-566.

Escolano, A. (2012). El manual como texto. Revista Pro-Posições. 23 (3), 33-50.

Guérios, P. (2009). Heitor Villa-Lobos: o caminho sinuoso da predestinação. Parabolé.

Villa-Lobos, H. (1941) (2009). Guia prática para a educação artística e musical, 1. Volume – estudo folclórico musical. ABM-FUNARTE.

Vincent, G.; Lahire, B.; Thin, D. (2001). Sobre a história e a teoria da forma escolar. Educação em Revista. 33, 7- 47.

For an open, inclusive and empowering Documentation and Information Center: rethinking the circulation of resources within a school, a case study of an agricultural high school library.

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The aim of our proposal is to present a project-grounded research within the Documentation and Information Center of an agricultural high school specializing in horticultural production and landscaping. This investigation echoes the main theme of the conference: on one hand, environmental issues: official programs and prescriptions include the ecological question, on the other hand, social changes: we note a lack of use, or even disinterest, in the Documentation and Information Center and its resources.

Our ambition is to rethink the Documentation and Information Center as a central area to access resources, resources that contribute to the development of learners' academic, professional and civic skills. What kind of mediation is needed to attract and retain learners? How can the Documentation and Information Center be used by teachers to familiarize learners with school culture? How can we create a continuum between theoretical content and professional skills that can enrich professional practices, particularly in the light of environmental issues? Finally, how can we create an ecological place regarding environment and documentary, that respects the cycle life of the resource (from acquisition to potential obsolescence)? This work on the life cycle leads to a broader reflection on the circulation of resources, firstly within the high school, but also within the region, by mobilizing the various players - institutional, associative and professional - likely to be involved with learners.

Explanation of method and/or methodology and its relevance towards the research question: We chose the project-grounded research approach defined by Findeli (2005). This approach makes it possible to engage the participation of players in the field, who can thus contribute to redefining their role and modifying their practices.

Description of the data and how the data are analysed if empirical research: This approach is based on several phases of analysis and investigation. In phase 1, our work is based on ethnographic immersions: field surveys in the Documentation and Information Center and cultural spaces, mapping of resources, photographs of spatial organization, analysis of signage and resource classification, observations of the using of Documentation and Information Center, semi-directive interviews with teachers, and the teacher-library, involved in this research-project with the dual capacity of an actor and researcher. These data are cross-referenced with screenshots and statistics on the use of Documentation and Information Center resources. We are also

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studying institutional texts (reference documents, curricula, etc.).

In this presentation, we will focus on the process of recycling resources to counteract their uselessness and their obsolescence.

Results or preliminary results: Our initial results show that the eclecticism and sedimentation of signage and classification do not encourage the use of resources by teachers and learners. In addition, the Documentation and Information Center is not well connected to professional spaces (operations, laboratories, etc.).

This leads us to work on a homeostasis of resources on the scale of the establishment and the territory, but also on the scale of the landscape. It seems essential to us to propose a more synergistic vision of access to resources, one that is not bottom-up and less standardized (Dégheil and Huz, 2019; Dégheil, 2019), with the aim of encouraging borrowing and consultation.

At the stage of our research, the third place model would be a relevant model for rethinking the circulation of resources and thus fostering a "capacitating" environment (Falzon, 2013).

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References:

Dégheil, S., & Huz, O. (2019). Préface. Dans Depuis-là, Ailleurs (p. 13-14). Atelier Genius, ISDAT.

Dégheil, S., (2019). Folklore signalétique. Dans Depuis-là, Ailleurs (p. 47-70). Atelier Genius, ISDAT.

Falzon, P. (2013). Ergonomie constructive. PUF.
Findeli, A. (2005). La recherche-projet : une méthode pour la recherche en design. Dans R. Michel (Dir.), Erstes Designforschungssymposium, Zurich, SwissDesignNetwork 2005 (p. 40-51). SwissDesignNetwork

Keywords: Documentation and information center, Agricultural teaching, Project, grounded research

Sustainable Competences in Higher Education – Design Based Research Development of New ESD Curriculum

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Major problems in the EU and in the world regarding health, environment and climate-change, constitute an enormous challenge for the continued prosperity of citizens and countries. The solutions to the problems are complex and increase the demand for cross-border, North-South EU, educational and intercultural collaboration in the educational sector at Higher Education Institutions (HEI). The *SustainComp* project is based on partnership between four HEIs in the Czech Republic, Slovenia, Norway and Denmark focused on the development of a much needed future-oriented curriculum. The need for this stems from the current lack of a curriculum within sustainable development at HEI bachelor level. This interdisciplinary and cross curricular curriculum addresses environmental, health and climate related problems via innovative,

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digital and project-oriented and problem-based teaching methods, combined with Collaborative Online International Learning (COIL) for students. A full-scale-pilot of the new curriculum and the educational resources was conducted in fall 2023 at UCL in Denmark as a 10 ECTS course involving 35 students. The SustainComp curriculum was integrated in a regular English course and included interdisciplinary co-teaching in the topics of 'Sustainable Diets', 'Gender and Sustainable Development', 'Resurces, Inequality and Sustainability', 'Susainable Consumption of Energy Resources'. Research indicated that students developed sustainable competences in the form of critical and innovative thinking, interpersonal skills, cognitive, socio-emotional and behavioural competences and transversal skills, such as: intrapersonal skills, global citizenship, digital media and Information literacy. There were indications of students experiencing challenges with this international curriculum, because of language- and cultural barriers. The application of synchroneous and asynchroneous online teaching also included digital challenges for both teachers and students. The results will be included in the final version of the SustainComp Curriculum which will be relevant for teacher, nutrition, environmental and nurse education. The curriculum will be available online in English via Open Access in fall 2024 for students and teachers at HEI's. In a wider perspective, the SustainComp platform provides opportunities for further international collaboration on development of educational resources for teaching ESD and scaffolding of HEI teachers and students in dealing with the the associated challenges of climate-change, globale warming and environmental emergencies.

References:

Boeve-de Pauw, J., Olsson, D., Berglund, T., & Gericke, N. (2022). Teachers' ESD self-efficacy and practices: A longitudinal study on the impact of teacher professional development. *Environmental Education Research*, *28*(6), 867-885.

Gaarsmand & Ruge (2023) Sustainability integrated in teaching activities in teacher education'. *To Teach is to Build*, SL.

Rieckmann, M. (2017). *Education for sustainable development goals: Learning objectives*. UNESCO publishing.

Ruge, D., Johannsen, H. D., Graf, S. T., Kostanjevec, S., Kozina, F. L., Reissmannová, J. S., ... & Vik, F. N. (2022). Project SustainComp-State of the art report.: A Case Study of Four Higher Education Institutions. Norway, Czech Republic, Slovenia and Denmark.

Learning about economic crises: a challenge for the development of competences in lower and upper secondary education in Europe. A comparative study of curricula, textbooks and digital educational media

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Learning about economic crises: a challenge for the development of competences in lower and upper secondary education in Europe. A comparative study of curricula, textbooks and digital educational media

The presentation examines how the curricula and textbooks for lower and upper secondary education in selected European countries develop competence, as critical thinking skills, for understanding the causes of crises and propose solutions for forecast and overcoming crises in the future.

It presents an excerpt from a broader European research project that examines the representation of economic crises in the history curricula and textbooks of the member states of the Council of Europe, the results of which will be published by the end of 2024.

Crises, and in particular economic crises, can be interpreted and taught as societal turning points which can lead to social renewal, despite potentially intensifying polarizations within society and leading to emotional escalations in social debate. The concept of the crisis, particularly when addressed as an open-ended turning point and as a decisive moment in history teaching, rather than as moment of social divergence, provides manifold opportunities for historical learning. Learning about crises can enable students to understand risks and opportunities involved in moments of decision-making and to learn about negotiation and responsibility, when economic crises are not addressed solely to descriptions of the negative consequences, but also deals with proposed solutions and their concrete implementation in social practice. The concept of crisis is particularly suited to helping students develop attitudes, skills and knowledge as well as critical understanding, as formulated in the Reference Framework of Competences for Democratic Culture and in the guidelines for Quality History Education in the 21st Century prepared by the Council of Europe. The development of an understanding of values such as human dignity, fairness or equality in the field of economics, the advancement of attitudes such as curiosity and openness to others or self-efficacy as well as of skills such as empathy, cooperation and conflict resolution and an in-depth critical understanding of economic connectivity are important aspects of the Reference Framework of Competences for Democratic Culture.

To answer the research, question the presentation focuses on the proposed tasks in selected curricula and textbooks and compares the methods and competences developed therein for

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understanding crises and the solutions the students are asked to evaluate or to develop by themselves. It analyzes tasks in German, English, French and Spanish history textbooks. It looks finally in a comparative perspective which skills for understanding crises and developing solutions forecast and overcoming crises are offered in digital educational media compared to traditional textbooks. To do this, he analyzes selected video games about crises designed for school lessons.

The research design is inspired by the 'Augsburger Analyse- und Evaluationsraster für analoge und digitale Bildungsmedien' (AAER) (Augsburg analysis and evaluation grid for analogue and digital educational media), which was developed by a research group at the University of Augsburg led by Prof Eva Matthes. The study of the curricula and textbooks follows the criteria of curriculum and textbook analysis developed by the Observatory on History Teaching in Europe (OHTE).

The author is convinced that the methodology presented, as well as the topic of economic crises as a subject of historical political education via history lessons, which is the subject of the research project in the narrower sense, can also be used for the other subjects of social science teaching for the development of skills for understanding crises is important for problem-solving skills and the subject should be taught in a fruitful way across disciplines.

Bibliographical reference

Otto M., Sammler S., Spielhaus R. (2020): 'Krisen" als Seismografen gesellschaftlichen Wandels und Gegenstand schulischer Bildungsmedien'. In: *Handbuch Krisenforschung,* Herausgeber:Bösch, F.; Deitelhoff, N.; Kroll, S., Wiesbaden: Springer Verlag 2020, S. 93-108.

Fey C.-C., Matthes E.(2017): Das Augsburger Analyse- und Evaluationsraster für analoge und digitale Bildungsmedien (AAER) Grundlegung und Anwendungsbeispiele in interdisziplinärer Perspektive, Bad Heilbrunn: Klinkhardt 2017.

Keywords: economic crises competences critical thinking

The inclusion of women composers in Music Education as a means of fostering equity: research in Brazilian and German textbooks

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Works by women in the history of music in Germany have often been neglected (Grow & Roth, 2023), and previous studies have shown that their invisibility is extended to Music and Art textbooks used in Brazilian schools (Fey e Rauen 2022). This work presents an overview of research about the presence of women composers in music textbooks in Brazilian and German contexts, within a timeframe from 2008 to 2023. Textbooks are pedagogical tools, supporting truths and acting as vectors of powerful communication through high distribution (Choppin, 2000). Thus, they play a crucial role in the musical formation of students, shaping their perceptions and understandings about music conceived within a selective tradition. In this sense, the presence or absence of women composers in these works can directly influence the construction of students' musical repertoire. A systematic bibliographic survey was done in Brazilian and German databases, searching for articles, dissertations, and theses discussing the presence of female composers in music textbooks. Attention was paid to the peculiarities of each context, using keywords such as "women", "gender", "composers", "textbooks", "schoolbooks", "curriculum", "underrepresentation", "androcentrism", and "music". For the Brazilian case, the word "art" was included because music is part of the languages of the Art discipline. The keywords were combined in different ways, in Portuguese for Brazilian searches and in German for searches regarding textbooks used in Germany. In the Brazilian scenario, music was not regularly present in the curricula. The most important temporal marks were colonial times, orpheonic singing in the 1930s, artistic education in the 1970s, and art in the 1990s (Romanelli, 2019). The year 2008 was considered a symbolic milestone, marking the advent of law 11.769, making the teaching of Music mandatory in Brazilian schools. However, it was not as a specific course but among the artistic languages of Art. The research revealed that the concern with gender equity in teaching manuals and the curriculum was initially in the field of visual arts. There is research in history, geography, and English books addressing the invisibility of women, and in the specific area of music. Only one dissertation and six articles were found that discussed the issue of gender in textbooks. In the case of Germany, music is a subject with a historical tradition, despite the many variations between the curricula of each state and the types of schools. Research in the German context revealed a more robust discussion about the underrepresentation of women in music textbooks. Multiple German scientific articles have addressed the issue, signaling a greater awareness of the need to include women's contributions in musical storytelling. Discussions about promoting equity in textbooks are fundamental because, even if they are not used systematically, they are a curriculum reference for teachers who teach Music in both contexts. The underrepresentation of women composers in music textbooks goes beyond a mere information gap; it reveals a deep-rooted androcentrism in the materials available for the teaching of music. This androcentric perspective perpetuates gender stereotypes and limits the students'

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understanding of the richness and diversity of musical production throughout history. Furthermore, the fact that of women composers are not mentioned as such in Brazilian and German textbooks leads to the perpetuation of an androcentric *habitus*(Bourdieu, 2012), influencing the way students perceive not only music but also gender roles in society. This study emphasizes the importance of critical reviews of music textbooks and the discussion of these topics in the training of teachers because they are the agents who can interfere in the denaturalization of androcentric behaviors in new generations. In the Brazilian context, we signal towards a deepening of research on the analysis of educational manuals with a focus on gender diversity and intersectionality in Music Education. In the German context, despite more robust references, ethnic diversity and intersectionality still require further discussion in the analysis of educational materials, in order to overcome Eurocentric lessons. A more inclusive and equitable approach to the selection and presentation of musical content is crucial to promoting music education that reflects the diversity and richness of the global music landscape.

References

Bourdieu, P. 2012. *A dominação masculina.* Trad. Maria H. Kühner. 11 ed. Rio de Janeiro: Bertrand Brasil.

Choppin, A. 2004. História dos livros e das edições didáticas: sobre o estado da arte. São Paulo: *Educação e Pesquisa,* V. 30, n. 3, 549-566.

Fey, A. S.; Rauen, M. G. 2022. Currículo de Arte e equidade de género: existem compositoras? *Revista Faces de Eva.* Estudos sobre a Mulher, v. s/v, 57-75.

Grow, J.; Roth, A. T. 2023. *Gender in den Fachdidaktiken ästhetischer Fächer:* Forschung und Konzepte zu Unterricht und Lehrendenbildung. Verlag Barbara Budrich.

Romanelli, G. 2019. Research on music textbooks in Brazil. In: Rodríguez, J. R.; Garcia, T. B.; Bruillard, E. (ed.) *IARTEM 1991-2016: 25 years developing textbook and educational media research.* Santiago de Compostela: IARTEM.

Keywords: Music education, School textbooks, Androcentrism.

Leveraging Profession-Based Fiction to Foster Critical Thinking on Professional Ethics Questions: Task Design and Student Productions

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This presentation explores the educational potential of repurposing cinematic profession-based fiction in an online English for Specific Purposes (ESP) course to foster critical thinking skills. Aimed at first-year economics and management students, the course integrates tasks aligned with the Common European Framework of Reference (CEFR) and its 2018 Companion Volume (CEFR/CV), which emphasise language use "directed towards enabling learners to act in real-life situations, expressing themselves and accomplishing tasks of different natures" (Council of Europe, 2018: 27) with no predetermined outcome. This definition echoes the assessment of critical thinking in educational contexts, where instructors are encouraged to refer to "authentic, real-world problem contexts" (Lai, 2011) which "should have more than one plausible or defensible solution" (Moss & Koziol, 1991 in Lai, 2011: 39). Our task design incorporates the CEFR/CV's mediation competency and its descriptors, which, we argue, resonate with key principles of critical thinking.

In the realm of teaching Languages for Specific Purposes (LSP), we posit that cinematic profession-based fiction serves as an ideal creative text to encourage mediation, as it "seamlessly connects lexis, actions, places, historical events, technical details, behaviours, mindsets, problems and plot" (Van der Yeught, 2018: 114). Despite being traditional media, films can become potent educational resources through instructors' selective curation, scene choices, and extract editing.

LSP researchers emphasize the importance of preparing students to "function adequately in the target professional environment at socio-professional level" (Isani, 2011: 35), highlighting the non-negotiable role of behaviour in the workplace and in LSP. This perspective echoes the discipline-specific nature of critical thinking, and the idea that it should allow learners' appropriation of standards and values embodied in a discipline (Paul, 1992 in Lai, 2011: 14).

Tasks in our course focus on ethically charged questions related to the banking and finance field, as well as more general moral and ethical issues which students can relate to. This approach acknowledges the often-limited professional experience of undergraduates, engaging them in broader moral and ethical discussions. We aim to leverage broader experiences, particularly those related to dishonesty, hiding, or distorting the truth, to encourage critical reflection on the depicted professional field. The ethical and moral questions serve as a pivotal junction between domain-specific and general critical thinking skills, also aligning with the CEFR/CV's mediation strategies which emphasise drawing on experiences or previous knowledge to explain new concepts (Council of Europe, 2018: 128).

Given the parallels between mediation and critical thinking, we contend that tasks encouraging

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mediation concurrently promote critical thinking: students analyse and evaluate the issues depicted in profession-based fiction and lived by the characters, drawing connections to personal experiences, emotions, and their peers' perspectives. This serves as valuable preparation for the workforce (Lai, 2011: 41), yet presents no tangible consequences or risks to students, and aligns with the emphasis on "work ethic" and "conscientiousness" as Intrapersonal Competencies from the National Research Council 21st Century Competencies (2012).

Incorporating digital and information literacy questions, with a focus on issues like online scams, addresses students' familiarity with the topic. This inclusion not only promotes other 21st century skills alongside critical thinking, but also allows students to complement film resources with personal media practices as evidence for their arguments, as they collate information from various sources (Council of Europe, 2018: 110) and act as mediators.

The presentation will showcase task design examples and students' written interactions on the Moodle platform's discussion forums, highlighting how considering mediation characteristics fosters both mediation between students and critical thinking regarding the world of work in general, and the banking and finance field in particular. A content analysis of student productions among the course's 85 participants will underscore the intersections between mediation and critical thinking, demonstrating how questioning first-year students on broad ethically acute issues can develop their reflection on more domain-specific questions. The presentation will conclude with suggestions for similar approaches in other LSP fields such as law, police, or medical studies.

Council of Europe. (2018). Common European Framework of Reference for Languages: Learning, Teaching, Assessment. Companion Volume with New Descriptors. Council of Europe. https://rm.coe.int/cefr-companion-volume-with-new-descriptors-2018/1680787989

Isani, S. (2011). Developing Professional Cultural Competence through the Multi-layered Cultural Substrata of FASP: English for Legal Purposes and M. R. Hall's The Coroner. Cahiers de l'APLIUT, 30(2), 29–45. https://doi.org/10.4000/apliut.1497

Lai, Emily. (2011). Critical thinking: A literature review. Pearson's Research Report. 6.

National Research Council. (2012). Education for life and work: developing transferable knowledge and skills in the 21st century. (J. W. Pellegrino & M. L. Hilton, Eds.). Washington, DC: National Academies Press.

Van der Yeught, M. (2018). FASP, the FASPian Paradox and Specialised Encyclopaedias: Highlighting FASP Relevance in Learning/Teaching Specialised Languages. ILCEA, 31. 112-119. https://doi.org/10.4000/ilcea.4684

Have the study habits of students changed with the change in learning materials? The use of learning resources by university students in the last ten years

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Research problem and research questions

The paper reports on exploratory ten-year-long research focused on the study habits of university students related to the use of learning materials, and it is a follow-up to the study presented at the preceding IARTEM conference. The overall aim of the study was to find out what study resources university students used, in which ways they used the resources and if the ways of use were related to the students' approaches to learning.

The term 'study habits related to learning materials' refers to the frequency of use of different genres and formats of learning materials, the factors that influence their selection, the ways in which materials are procured, the times at which materials are used, and the procedures that students adopt when learning from them. In recent years, some studies in the broad research field of higher education concerning teaching and learning materials have occurred, the vast majority of those focused on the comparison of printed and digital materials (e.g. Mizrachi et al., 2018). Apart from this solid thematic stream, research on the use of university study resources still remains somewhat limited. Understanding and diagnostics of learning approaches in this study stem from the theory of approaches to learning, which is based on classical studies by Marton and Säljö on deep and surface approaches (e.g. Marton & Säljö, 1997).

This paper will address fundamental research questions related to the dramatic contemporary changes in the ecology of learning materials: How has the use of learning materials by undergraduate student teachers changed over the past decade? Have students' study habits changed along with the change in learning materials' use?

Methodology

Considering the lack of research findings on the usage of study resources and study habits of university students related to learning materials, a design of an exploratory quantitative survey has been adopted. The data were elicited by means of two tools: an adapted Czech version of an original British tool, ASSIST (Approaches and Study Skills Inventory for Students) and The Use of Study Resources Questionnaire (USRQ), a tool of our own construction. The ASSIST questionnaire (2005) was originally developed at the University of Edinburgh, and throughout the years, its validity has been examined in many different countries and cultures. The tool has

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been adapted and verified in a pilot study, and confirmatory analyses have been applied. The values of Cronbach's alpha coefficient of reliability of both instruments were acceptable.

The data collection was carried out at the Faculty of Education, Faculty of Science and Faculty of Arts, University of Ostrava, Czech Republic. Data were collected repeatedly each November to December for ten years, from 2013 to 2023. The research sample comprised teacher students from three faculties who had studied in the 1st year of their Master's studies at the University of Ostrava (n = 1049). The questionnaire was administered to all teacher students in the year and the return rate ranged between 60–70 percent.

The analyses of the normality of the data proved that they were not normally distributed. Therefore, the Kruskal-Wallis and Mann-Whitney nonparametric tests were chosen for testing the hypotheses, followed by post-hoc tests. The test power characteristics and effect size significance were elicited, too.

Results

The statistical analyses proved the study habits significantly differed according to the approaches to learning with the only exception: the students unambiguously preferred learning from printed texts over learning from texts in the digital form. The results suggest that while the use of digital materials (and most recently, artificial intelligence as a resource for learning) has increased dramatically over the years, study habits related to materials use have not changed significantly. Students were still the most likely to use their own notes from lectures and seminars, presentations created by teachers and course readers as the most frequent materials. At least one-third of the students considered one or two resources as sufficient while preparing for an exam or a test, and over half of the students used learning materials almost solely at the end of the course.

References

Approaches and Study Skills Inventory for Students (ASSIST). (2005). Enhancing Teaching-Learning Environments in Undergraduate Courses (ETL Project). School of Education. University of Edinburgh, 2001–2005.

Marton, F., & Säljö, R. (1997). Approaches to learning. In F. Marton, D. J. Hounsell & N. J. Entwistle (eds.), *The Experience of Learning*, 2nd edition (pp. 39–58). Edinburgh: Scottish Academic Press.

Mizrachi, D., Salaz, A., Kurbanoglu, S., & Boustany, J. (2018). Academic reading format preferences and behaviors among university students worldwide: A comparative survey analysis. *PLoS ONE 13*(5). Retrieved from: https://doi.org/10.1371/journal.pone.0197444

Printed and digital learning materials' purposes of use at the lower secondary school in English and Biology

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Research problem and research questions

The paper reports on part of a broader PhD research project on the selection and use of printed and digital learning materials in the teachers' preparation and teaching process itself at the lower secondary school in English and Biology. In the framework of research on materials selection and use, the investigation focuses in particular on the modifications that teachers make (or do not make) with learning materials and the purposes of use.

The research responds to previous studies demonstrating the growing importance of digital materials, especially after the COVID-19 pandemic. Digital technologies provide new affordances (Mochizuki & Bruillard, 2019) and also introduce new challenges, including issues of efficiency, fairness in access, and adaptation of teaching methods (Haleem et al., 2022). Teachers play a very important and active role in using both types of learning materials, considering various factors such as their own pedagogical goals and the needs of students (Li & Harfitt, 2018). Teachers can modify the learning materials in different ways to better achieve the objectives. According to studies (e.g. Chen et al., 2020), teachers often add to teaching materials, modify them less often, and remove the original content rarely.

The study underscores the importance of teacher agency in selecting, using, and modifying learning materials to cater to diverse learning needs and enhance educational outcomes. The following research questions have guided the investigation:

1) How do the lower secondary teachers of Biology and English language choose printed and digital learning materials, where do they look for them, and where do they get information about them?

2) How do the lower secondary teachers of Biology and English language use and modify printed and digital learning materials?

3) For what purposes do the lower secondary teachers of Biology and English language select the printed and digital learning materials, and for what purposes do they subsequently use them?

Methodology

The research employs a mixed-methods design, including surveys, in-depth interviews, field observations, and content analysis. This approach ensures a deeper understanding of how teachers

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incorporate various types of learning materials into their teaching while also supporting the greater validity and reliability of the research.

The paper focuses on presenting the results in relation to research question 3, i.e. the purposes of selecting and using the materials. In-depth semi-structured interviews were performed with 5 English language teachers and 5 Biology teachers, and structured observations of two lessons for each were made. Participants were selected using the maximum variation sampling method. The interviews were recorded and transcribed verbatim. Data analysis was then conducted through open coding, and constant comparison analysis was applied. The programme ATLAS.ti, version 7, was used. The resulting findings were compared with the lesson observations.

Preliminary results

The research provides insights into the evolving role of learning materials' use in contemporary hybrid teaching and learning environments. It highlights the dynamic interplay between printed and digital resources in lower secondary education, specifically in the subjects of Biology and English. Preliminary results regarding the materials' usage indicate that printed textbooks with workbooks still play a vital role in English language and Biology classes. However, the purposes of their use differed not only between the two subjects but also depending on the learning materials' styles of use by individual teachers. Nevertheless, the role of the textbook, whether print or digital, seems to be changing from being a repository of information to becoming more of a coordinating and integrating factor between all other resources. Digital learning materials were selected and used in lessons mainly as a means of motivating students, visualizing content and structuring it.

The study underscores the importance of teacher agency in selecting, using, and modifying learning materials to cater to diverse learning needs and enhance educational outcomes.

References

Chen, B., Wei, B., & Wang, X. (2020). Examining the factors that influence high school chemistry teachers' use of curriculum materials: From the teachers' perspective. *Journal of Baltic Science Education, 19*(6), 893–907.

Haleem, A., Javaid, M., Asim Qadri, M, Suman, R. (2022). Understanding the role of digital technologies in education: A review. *Sustainable Operations and Computers, 3*, 275–285.

Li, Z., & Harfitt, G. (2018). Understanding language teachers' enactment of content through the use of centralized curriculum materials. *Asia-Pacific Journal of Teacher Education, 46*(5), 461–477. DOI: 10.1080/1359866X.2017.1351918.

Mochizuki, Y., & Bruillard, E. (Eds.) (2019). *Rethinking pedagogy: Exploring the potential of digital technology in achieving quality education.* UNESCO, MGIEP.

Rewilding language learning resources in higher education

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Research problem and questions

With the advent of ubiquitous access to online contents in English, teachers of non-specialist English classes in higher education face the challenge to create materials which remain relevant to today's learners. Indeed 15 years of research into informal digital learning of English (Dressman & Sadler 2019, Toffoli et al, 2023) indicates that, in terms of hours, out-of-class informal English activities, such as viewing vlogs and series, social networking and gaming in English, frequently dwarf the number of hours of contact time for the language requirement of students specializing in disciplines other than English. For example, while online informal activities often account for several hundred hours per year, non-specialist students in French universities are typically offered between 15 and 48 hours of English classes per year. The term "wilds" has been used by Sauro and Zourou (2019) and others to refer to online materials and interactions not designed for language learning, while "rewilding" was applied to language teaching and learning by Thorne et al (2021) and indicates an ecological approach to language teaching and learning which acknowledges the interaction between in-class and out-of-class activities in the complex dynamic system of second language development. Given this context in which learners are developing skills in English outside the classroom, action research into how to make the few hours of classroom learning relevant has been one of the areas of interest to researchers in the field of informal digital learning of English (Moffat, 2022). The issues of how to best engage with informal learning in the setting of non-specialist language provision within the French higher education system therefore need to be addressed on a case by case basis. **The specific aim of this paper** is to present findings on the implementation of English teaching materials for undergraduate Language Sciences students, designed to replicate learner activities outside the classroom and thus reduce the perceived distance between formal and informal language practices.

Methods and data

The paper includes a discussion of the design, implementation and assessment of language learning materials based on the most frequently reported informal learner activities, such as listening to music, watching videos and social networking in English. It will also analyse the chacteristics of such materials compatible with an "English for Specific purposes" focus in Language Sciences. The learning materials used in this process include vlogs made by humanities students in English speaking countries, professional fiction, such as films set in specific professional contexts and more academic documents on the same themes. Tasks undertaken by students include the production of videos in the style of the vlogs discussing their academic work and student life. After a brief analysis of the design process relating to the contents with reference to existing scholarship on rewilding and informal language learning the paper will then analyse

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questionnaire data from learners exposed to these materials. This involves essentially qualitative analysis of responses to open questions as well as some descriptive quantitative analysis of reports of learner practices online outside the classroom. **The methodological steps undertaken are as follows**: design and implementation of learning materials for undergraduate Language Sciences students, design of a questionnaire to elicit data from learners, analysis of data from learner questionnaires to evaluate learner engagement with the materials.

Preliminary results

Preliminary results indicate that learners see the activities used in these classes as helpful both in terms of classroom learning and as a catalyst to harness the language learning affordances of out-of-class activities. Hence rewilding the classroom is not simply a matter of putting learners' out-of-class activities to good use in the classroom, but of putting classroom time to good use to enhance learner engagement with the range of out-of-class activities which will be part of their daily lives for the many decades beyond their time in formal education.

References

Dressman, Mark, and Randall William Sadler, editors. *The Handbook of Informal Language Learning.* 1st ed., Wiley, 2019, https://doi.org/10.1002/9781119472384.

Moffat, Andrew D. *Second Language Use Online and Its Integration in Formal Language Learning: From Chatroom to Classroom.* Multilingual Matters, 2022.

Sauro, Shannon, and Katerina Zourou. *What Are the Digital Wilds?* no. 1, Feb. 2019, pp. 1–7, http://scholarspace.manoa.hawaii.edu/handle/10125/44666.

Thorne, Steven L., et al. "Rewilding Language Education: Emergent Assemblages and Entangled Actions." *The Modern Language Journal*, vol. 105, no. S1, 2021, pp. 106–25, https://doi.org/10.1111/modl.

Toffoli, Denyze, et al., editors. *Language Learning and Leisure: Informal Language Learning in the Digital Age.* De Gruyter, 2023, https://doi.org/10.1515/9783110752441.

The challenge of education for sustainability in Italian school system: a new communication model among schools, associations, research centers

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This abstract introduces an ongoing research coincided by the research group of the "scientia Atque usus" Research Center for Generative Communication (a research body of the nonprofit sector founded in 1991 by Prof. Luca Toschi) dealing with the italian school system (from primary to upper secondary education) cooperates with both the environmentalist associations and the research community to promote a culture of sustainability in schools.

As we all know, schools play a key role in the education of young generations towards sustainability as it is highlighted by the Agenda 2030, and from a co-benefits perspective, it undoubtedly holds strategic importance for achieving all Sustainable Development Goals but - above all - for those developments post-2030: 'By 2030, ensure that all learners acquire the knowledge and skills needed to promote sustainable development, including, among others, through education for sustainable development and sustainable lifestyles, human rights, gender equality, promotion of a culture of peace and non-violence, global citizenship and appreciation of cultural diversity and of culture's contribution to sustainable development' (Agenda 2030, p. 17).

Sustainability education in Italy is not yet fully recognized and updated in the school system. Although, in June 2022, a law was promulgated - in italian "Salvamare Law" - that imposes a true environmental education through "the implementation of activities to make students aware of the importance of environmental conservation" as well as the promotion of appropriate practices of waste selection, recovery and reuse of end-of-life goods and products in schools.

Therefore, the italian school system can no longer postpone taking a leading role in this field, and the research group believes that sustainability cannot be treated as a subject to be added to the curriculum or - worse - as a thematic in-depth study relegated to extracurricular activities. On the contrary, the challenge that education for sustainability (which is not only environmental but also necessarily social and economic) is to face a radical rethinking of both its disciplinary organization and its social role (and therefore the relationship it activates with other social entities: from the production world to associations, from the research community to local institutions).

The main aim of the research is to define a communication model (and related tools) - based on the Paradigm of Generative Communication (Toschi 2011) - to enforce the cooperation between

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schools, associations and research centers to work on sustainability education in schools.

Starting from a first phase of desk research, the research have been collecting data about the type of educational contents (books, videos, etc.) that research bodies (such as INDIRE - the National Institute for Documentation, Innovation and Educational Research and CNR - National Research Council of Italy) and environmental associations (Italian Climate Network, Generation Carbon, Greenpeace, Teachers for Future, etc.) are offering to the italian schools. The research group is developing a content analysis to identify what are the main concepts and values about sustainability they are offering to schools (and of course if it is communicating within all the dimensions: environmental, social, economic).

At the same time, the research group - this is the current phase - is developing a series of in-depth interviews involving the authors of these educational contents and project managers. These interviews are aimed at analyzing how these contents offered from the research community and associations can integrate with the schools' educational offer, helping them not to see education for sustainability as an additional activity but transforming it into a principle capable of reshaping teaching, methodology, spaces, times, and relationships. The results of this analysis will be presented in a public event in which the research group will organize workshops with the stakeholders in order to co-design new solutions.

During the IARTEM conference (May 2024), the research group will be able to present and discuss the initial results of this research activity and the first prototype of communication model to help schools to cooperate with associations and research centers to promote sustainability.

References:

Anichini, A. (2021). Ripensare la scuola: oltre il COVID. Tarka

Anichini, A., Bartolini, R. (2023). Libri di testo e contenuti didattici digitali: un dialogo possibile?. Carocci

Sbardella, A. (2019). La sostenibilità scomunicata. Cosa stiamo sbagliando e perché. Apogeo.

Toschi, L. (2011). La comunicazione generativa. Apogeo.

United Nations. (2015). Transforming our world: The 2030 Agenda for Sustainable Development. https://sustainabledevelopment.un.org/post2015/transformingourworld/publication

Keywords: Education for Sustainability, School and Society

Pre-school teachers' expectations of educational materials for developing pupil's climate awareness

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The knowledge, attitudes, skills and behaviours acquired in early years have a significant impact on the development of an individual's sustainable lifestyle (UNESCO, 2020). The teachers have an important role in this process, as they provide pupils with vital experiences and shape their attitudes and behaviour. Because the field of sustainable living contains challenging topics and complicated terminology, teachers may feel insecure when dealing with them. Previous study has shown that teachers are not sufficiently prepared to teach topics of climate change (Spiteri, 2002) and therefore tend to avoid teaching these topics and discuss climate issues in preschool. There is also a lack of educational materials that would support teachers in handling these topics. With the aim to find out how Estonian pre-school teachers evaluate the educational materials that can be used to develop the pupils' climate awareness and based on which principles they select suitable educational materials, 56 pre-school teachers were questioned. Two research questions were stated: 1) To what extent do preschool teachers evaluate the educational materials to develop their pupils' climate awareness?; 2) What principles do pre-school teachers follow and what goals do they consider important for selection of climate awareness educational materials? Descriptive statistics and qualitative thematic analysis were used to analyse the teachers' answers. According to the teachers' open answers, there is a lack of suitable educational materials for pre-school or the existing materials do not obviously support teachers in teaching the topics of climate change. The teachers' expectations for educational materials of climate awareness concern various aspects, including content, appearance, the pupils' motivation and support for the child's cognitive and social development. In selecting learning materials, teachers mainly consider the content of the educational materials and the complexity of the text. It is essential for the teacher that the educational materials are age-appropriate, understandable and logical for the pupils. Previous studies have emphasised the importance of diversity of learning materials, easy differentiation of teaching (Reints & Wilkens, 2019), and individual approach (Czeglédy & Kovács, 2008). These principles were also mentioned in this research. The results of the study can be taken into consideration to develop educational materials that increase teachers' confidence in adapting existing materials and help to better teach climate awareness topics to pupils in an age-appropriate way.

References

Czeglédy, I., & Kovács, A. (2008). How to Choose a Textbook on Mathematics? *Acta Didactica Napocensia, 1*(2), 16–30.

Reints, A. J., & Wilkens, H. J. (2019). How teachers select textbooks and educational media. *IARTEM 1991-2016: 25 years developing textbook and educational media research*, 99.

Spiteri, J. (2022). Early Childhood Teachers' Perceptions of Environmental Sustainability: A Phenomenographic Investigation. *Australian Journal of Teacher Education, 47*(5). http://dx.doi.org/10.14221/

UNESCO (2020). *Education for sustainable development: A roadmap.* Paris: UNESCO.

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https://www.gcedclearinghouse.org/sites/default/files/resources/200782eng.pdf

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Textual coherence and fragmentation in teaching and learning material systems for Norwegian as a school subject (L1)

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The increasing presence of computers in Norwegian classrooms has contributed to a situation where the teaching and learning material landscape is larger, more complex and less coherent than before (Gilje et al., 2016). Today's comprehensive teaching and learning material systems include core components like printed or digital books supplemented by additional digital resources. Such systems are didactic teaching resources with adapted content and didactical design supporting the teacher's work.

In addition, students and teachers use resources from the Internet that may be relevant for learning, but which are not originally intended for school use. Such "hybrid practices" where the learning material mix consists of didacticized resources and recontextualized resources (both content and technologies) place new demands on the teacher's competence for integrating and adapting the diverse resources (Rasmussen & Lund, 2015). Vareberg (2018) argues that even learning resources especially made for learning material systems sometimes are fragmented and lack coherence putting a demand on the teacher to integrate and adapt the resources.

In the paper, I will present an ongoing text-oriented study of the textual coherence of the learning resources in each of the four most-selling L1 textbook / learning material systems for lower secondary school in Norway (*Fabel, Kontekst, Norsk, Synopsis*). The research questions I seek to answer, are: How are the systems of texts structured, and how are materially distinct components tied together to form thematic text complexes? Which "producer roles" are generated by the learning material systems, and how does their interplay contribute to the coherence in the systems?

The first corpus group is the chapters and resources about inter-Scandinavian language understanding and literature – a traditional topic covering both language and literature. The second group is the textbook chapters and supplemental resources about film – a comparatively new topic in Norwegian L1, including multimedia and multimodal approaches. Few teachers have specific expertise in these subject areas – so one can assume that most teachers are likely to rely on resources in the learning material system for their planning and teaching of these subjects.

Theoretically the paper draws on the text linguistic concepts like cohesion and coherence (Beaugrande & Dressler, 1981; Halliday & Hasan, 1976) as well as Eco's semiotically oriented reception theory (Eco, 1979) with an emphasis on the concepts model author – model reader. Through qualitative text analysis I seek to investigate how both singular texts and thematic complexes of diverse resources are bound together by textual ties. Furthermore, I investigate the interplay

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and collaboration – in a Bakhtinian sense – between different textualized producer roles/voices. The identification of different producer roles, is done by categorising content and propositions, identifying semiotic modality properties (like layout, colours, and fonts) and distinct communicative projects (like presenting subject matter vs. shaping students' learning activities by the means of questions, exercises, and assignments).

This study does not cover actual teaching practices, it departs from the assumption that the classroom practice of using 'authentic' texts and information sources that are recontextualized and not intended as learning materials, places demands on the teacher to evaluate, adapt and recontextualize such resources in a teaching situation. In short: "hybrid teaching practices" require experienced teachers with better content matter knowledge than using teaching and learning resources designed and/or adapted for specific target groups, curricula, and specific learning situations. Investigating the coherence and the level of didactical adaptation of resources can contribute to identifying some of the demands the learning material elements places on the teacher.

References

- Beaugrande, Robert de, & Wolfgang U. Dressler. (1981). *Introduction to text linguistics.* London: Longman.

- Eco, U. (1979). *The role of the reader: explorations in the semiotics of texts.* Indiana University Press. Gilje, Ø., Ingulfsen, L., Dolonen, J. A., Furberg, A., Rasmussen, I., Kluge, A., Knain, E., Mørch, A., Naalsund, M., & Skarpaas, K. G. (2016). Med ARK&APP: Bruk av læremidler og ressurser for læring på tvers av arbeidsformer. Universitetet i Oslo.

- Halliday, M. A. K., & Hasan, R. (1976). *Cohesion in English.* Longman Rasmussen, I., & Lund, A. (2015). Læringsressurser og lærerrollen – et partnerskap i endring? *Acta didactica Norge*, 9(1). https://doi.org/10.5617/adno.2352

- Vareberg, O.C. (2018). *Samarbeid og sekvensialitet: transmedial koherens i fem pedagogiske tekstsystemer for norskfaget på vg1.* Universitetet i Oslo, Det humanistiske fakultet.

A critical perspective on discursive coercion in history textbooks

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This paper is based on my theoretical and methodological work in French Discourse Analysis, on the one hand, and on a study on how National Socialism and World War II are treated in French and German history textbooks, on the other hand. The aim is to show how discourse-analytical tools can lead to a better understanding on how representations are constructed in textbooks and how their status within society is conveyed.

The long-term aim I pursue within discourse analysis is to investigate "discursive cultures", which can be defined by means of the discursive manifestations as well as the discursive construction of social representations that are circulating within communities of any kind concerning social objects, on the one hand, and the discourse to be held about these objects on the other hand (that is, what must, can and cannot be said about them and how it can and cannot be said). Textbooks, as being used by epistemic institutions, are especially important "objects" as well as agents "of social construction" (Guichard 2018, 322), but also objects and agents of discursive construction (which albeit being related to social construction does not coincide with it).

Methodologically, the primary access to social representations through discursive representations are linguistic markers. However, one needs not only to grasp what exactly is said and how, but also what remains unsaid. Yet silence can only be observed indirectly. In an effort to conceive *discursively* relevant silences as well as their detection I established a comprehensive table linking analytical procedures to various levels of "presence" and "absence" in discourse, which are in turn linked to different levels of consensus or dissensus on representations within a community. Analyzing history textbooks by means of the table, which implies distinguishing what is said from what is not said, what is "little said" and what is, on the contrary, strongly stated, helps in turn to distinguish obvious, mandatory, sensitive and unacceptable social as well as discursive representations. In other words, it is a means to bring about what students are more or less forced to say, on the one hand, and what they are prohibited from saying, on the other hand, but also what they can choose to say or not and what they can say but without insisting and, finally, what they need not say because it is obvious. In this perspective I examined the chapters on National Socialism in four French and five German history textbooks. All of them are more or less recent books from major publishers and are still in use. The French textbooks are all for the ninth grade whereas the German publications can be used in either the ninth or the tenth grade, depending on the *Land*. All school types that exist in Germany at this level as well as several *Länder* are represented in the data set.

In the paper I will first present the above-mentioned discourse analytical method and then show by means of examples from the data set how to detect different levels of presence and absence in discourse and what they mean in terms of the status of certain representations about National Socialism and World War II in Germany and in France. Finally, adopting a critical stance, I will insist on how exactly discursive coercion operates in textbooks, sometimes without

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the students or probably even the authors noticing it.

Guichard, Sylvie. 2018. "War in Textbooks." In *Palgrave Handbook on Textbook Studies*, edited by Eckhardt Fuchs and Annekatrin Bock, 317-28. New York: Palgrave Macmillan.

von Münchow, Patricia. 2018. "Theoretical and methodological challenges in identifying meaningful absences in discourse." In *Exploring silence and absence in discourse. Empirical approaches*, edited by Melani Schröter and Charlotte Taylor, 215-40. London: Palgrave Macmillan.
von Münchow, Patricia (2023). *Comment les manuels d'histoire allemands parlent du national-socialisme. Discours présents et représentés*. Limoges : Lambert Lucas.

Keywords: discourse analysis, history textbooks, the unsaid

Exploring the facilitation of multiple representations in high school textbook exercises on students' learning in climate change

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Based on the meaning of science for all and literacy-oriented instruction, the General Guidelines of 12-year Basic Education suggested that all students must elect the subject of Earth Science at least two credits in high school (TMOE, 2018). For this purpose, all high school students can possess the scientific literacy to retain problem-solving skills and deal with the issues in their daily lives (NGSS Lead States, 2013), such as the issue of climate change. However, Climate Change is a complex concept because it is affected by the global system and the whole earth system. Thus, the textbook in Earth Science provides features to support high school students learning about climate change, especially in evaluating their learning.

This study investigates the facilitation of multiple representations in high school textbook exercises on students' learning in climate change. Specifically, the analysis was guided by the following research questions: RQ1. Is the concept of climate change a complex system? RQ2. Do the multiple representations facilitate assessing the student's performance on the exercises of complex systems such as climate change? RQ3. What are the differences in the exercise items on climate change in different curriculum guidelines?

In response to the research questions, the current study focused on the four publishers' Earth Science textbooks and collected the exercise items of the Climate Change chapter. A total of 96 items (2019 version:40; 2009 version:56) were analyzed by the content analysis. The three coding schemes were utilized to realize the relationships among the cross-domain concepts, the inquiry practices, and the representations. For example, an item from the T2 publisher's 2019 version presents a table with the number of days and peak temperatures (highest and lowest temperatures) in winter and summer at the four measuring stations from 1957 to 2006 (also see supplementary). Then, the task required students to respond to two items: (1) What is the title of this research? (2) Please discuss this table and state at least two points about the phenomenon observed from the data. In this situation, the first item was coded in the "interactions" of cross-domain concepts, with the inquiry practice of "questioning" and the "statistics table" representation. On the other hand, the second item gets the codes of "interactions," "reasoning," and "statistics table."

The findings revealed that the concept of climate change is relatively complex and needs a comprehensive application of knowledge within the Earth Science knowledge system. Examination questions about climate change mainly encompass knowledge concepts spanning cross-disciplines, particularly addressing the themes of "interactions" and "changes and stability."

When solving problems, the findings also indicate that students do not rely on extracting singular knowledge, rather than applying what they have learned and integrating various cross-disciplinary concepts-a more appropriate representation, such as the statistic chart or data table.

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*Speaker

Thus, learners can demonstrate integration skills to make their claim about climate change. Moreover, the proportion of questions requiring comprehensive application has gradually increased, contrasting with the predominantly textual and recalling questions in the previous curriculum (2009 version). Simultaneously, the research analysis reveals that, due to the new curriculum's requirements, the latest questions are beginning to incorporate topics that integrate the nature of science and cultivate students' interest in science.

Since the concept of climate change is a complex system, the representations may facilitate students to realize the interactions and changes of variables in the earth system. This study suggests the importance of the implications for textbook researchers and designers that utilize multiple representations to assess student learning and allow them to self-evaluate.

Reference

NGSS Lead States. (2013). *Next generation science standards: For states, by states.* National Academies Press.

Taiwan Ministry of Education. (2018). *General Guidelines of 12-year Basic Education.* Taiwan Ministry of Education. https://www.naer.edu.tw/eng/PageSyllabus?fid=148

Re-Conceptualizing the Political Agency of Young Children in the Anthropocene

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This paper is connected to the specific conference theme 'climate change and education'. In this paper I critically analyze the reconfiguration of agency of children evident in international educational scholarship concerned with the Anthropocene - the epoch in which humans have become the dominant force behind extensive planetary destruction and ecological, political and social crises, such as climate change. To the extent that the Anthropocene is connected to a function of human actions, social structures and political decisions, how children and young people in education are conditioned to relate and respond to the challenges it poses is an important focus of inquiry in education.

In this paper I ask, what kind of children's political agency is constructed in educational scholarship in context of the Anthropocene. This is important question in educational research, because – according to the theory of Michel Foucault utilized in this research - educational discourses (i.e., socially and culturally produced forms of knowledge) structure and shape how we think about, act upon and practice education and it also shapes the possible agency positions of children (Bacchi & Eveline 2010). Furthermore, educational scholarship don't just shape educational practices and children's agency positions in the present, but also importantly have effects on the future, because the children participating in education today are future citizens. Political agency is understood here as the capacity and potential of individuals and collectives to resist and alter social order. Therefore, which kind of political agency of children is constructed in the education scholarship, has practical effects on the political capacity of children at the present and future citizens to alter the anthropogenic problems, such as climate change.

Applying Foucault's ideas related to problematization and Bacchi's method "What is the problem represented to be?", I discuss forms of political agency constructed in these educational discourses. As is the case with any form of knowledge, educational scholarship and policy texts discursively produces particular kinds of problem representations requiring particular kinds of ideal political agency as a "solution" to those problems (Bacchi & Eveline, 2010; Foucault, 1994). I analyse in this paper contemporary international educational scholarsip concerned of the Anthropocene, which is mostly connected to the early childhood education and childhood studies, based on posthuman and new materialist theories. The data of analysis includes peer-reviewed articles concerned of the education of children in the Anthropocene between years 2015-2020.

I argue in this paper that the educational scholarship concerned of the Anthropocene radically re-conceptualize the traditionally understood agency of children. This means, that agency traditionally understood in Western scholarship as something which is individual, intentional, rational, autonomous, and exclusively human form is radically questioned in favor of a form of agency that is held by the analysed articles to be relational and more-than-human agency, distributed between materials for example.

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*Speaker

I argue that this might be problematic in the context of the anthropogenic crises, such as climate change, because this agency production tends to limit the curative and resistant potential of children in the Anthropocene, both individually and collectively. This runs the risk of depoliticization of children's agency – which means that the agency of children is limited - depriving children of capacities to make a difference and alter change in the world. That is because agency which is not held as intentional and subjective makes it difficult to held accountability and responsibility of problems of the anthropogenic crises and alter them. Children's political agency, and voice, for example, are seen as outdated in analysed articles, not least because they are rooted in humanist ideas about children as potential or actual change agents.

Thus, I argue that the educational scholarship concerned of the Anthropocene – while emphasizing relational forms of agency– runs the risk of failing to adequately address the human and planetary predicament entangled with complex systems of power relations. Yet, the educational scholarship concerned the Anthropocene also open up important new ways of thinking agency as relational, collective and more-than-human. I claim that it is important for educational scholarship to further research the potentials of childrens political agency in the Anthropocene, because of the scale of the problems anthropogenic crises such as climate change have for humans globally. Education might play important role for rethinking the possibilities for political possibilities to alter these problems.

References

Bacchi, C., & Eveline, J. (2010). Approaches to gender mainstreaming: What's the problem represented to be? In C. Bacchi & J. Eveline (Eds.), Mainstreaming politics: Gendering practices and feminist theory (pp. 111–138). The University of Adelaide Press.

Common Worlds Research Collective. (2020). Learning to become with the world: Education for future survival. Paper commissioned for the UNESCO Futures of Education report 2021.

Foucault, M. (1990). The history of the sexuality, volume 1. An introduction. Penguin Books.

Foucault, M. (1994). Polemics, politics and problematizations. In P. Rabinow (Ed.), Ethics: The essential works of Foucault (Vol. 1, pp. 111–119). The Penguin Press.

Yliniva, K. & Brunila, K. (2023). Re-Conceptualizing the Political Agency of Young Children in the Anthropocene. In: Wyn, J., Cahill, H., Cuervo, H. (eds) Handbook of Children and Youth Studies. Springer, Singapore. https://doi.org/10.1007/978-981-4451-96-3_126-1

OPPORTUNITY TO LEARN MATHEMATICS IN TEXTBOOKS: A SYSTEMATIC LITERATURE REVIEW

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ABSTRACT

The opportunity to learn (OTL) mathematics constructs have been used to explore the relationship between classroom experiences and learners' achievement. In the textbook, authors analysed students' learning opportunities provided in tasks by analysing content coverage, cognitive levels, and content presentation and organisation features across various problems. Many researchers agree that the OTL presented to students in mathematics textbooks has a significant role in the student's learning outcomes and achievement. Textbooks play a decisive role in determining what and how OTL mathematics are presented to learners. However, scattered in the mathematics education research literature are various ways that are used to measure and present OTL mathematics in textbooks. The purpose of this systematic review is to contribute to this discussion by analysing the OTL in mathematics textbooks in international and national textbook content analysis studies. This paper reviewed 50 content analysis studies dealing with OTL in mathematics textbooks published between 2018 and 2022.

This review examines the content domains of OTL, how the studies measured OTL, whether sufficient OTL content was offered to students in the textbooks, and the relationship between the OTL in the textbooks and students' learning. The Preferred Reporting Items for Systematic Reviews and Meta-Analysis (PRISMA) 2020 framework guided the review process. The methods used to conduct this review were the ERIC database and the EBSCOhost Online Database, employing systematic search criteria including topic, year of publication, research base, reliability and validity, and research questions.

The findings show that the OTL content is measured by content coverage domain (number and arithmetic only (18%), algebra only (22%), geometry only (18%), statistics and probability only (6%), two and more content topics (30%), Euclidean geometry (2%) and their cognitive skills) and quality of instructional delivery (problem formats, representation features, contextual features, and response types). Furthermore, the findings indicate that OTL in mathematics

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textbooks has an effect on students' learning and achievement. These findings have implications for theory, practice, and research.

CONTEXTUAL FEATURES OF EUCLIDEAN GEOMETRY QUESTIONS IN SOUTH AFRICAN MATHEMATICS TEXTBOOKS

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Abstract

Euclidean geometry is a branch of mathematics that deals with the physical forms of the real world. In textbooks, Euclidean geometry task is likely to visualise mathematics ideas, thus Euclidean geometry problems may or may not have practical applications in everyday life. In the textbooks, students will find various forms of tasks, both in the form of worked examples and exercises questions such including representation forms of questions, the forms of answers, and contextual features and several other aspects such as cognitive demand in questions. This study focuses on contextual features. Contextualizing mathematical problems provides relevance, meaning, and application to mathematical concepts, making them more accessible and engaging for students. In the textbooks, students should find balanced type of problems related to contextual features in terms of application and non-application context. This study investigated the contextual features of Euclidean geometry questions in three South African mathematics textbooks series. The study was conducted within the interpretative qualitative research paradigm using Glasnovic Gracin's mathematical activity types framework as the analytical lens. Nine approved Grades 10-12 textbooks from 3 different well known textbook series (Classroom, Platinum, and Mind action series mathematics) were analysed. The aim of the study was to examine how the contextual features were used to promote opportunity to learn Euclidean geometry. The analysis encompassed 2338 tasks from the three textbook series.

The findings of the study indicate that the majority of Euclidean geometry tasks, 875 (100%) tasks in CM textbook series, 701 (100%) in PM textbook series and 762(100%) task in MA textbook series belong to non-application context that is questions not related to real life. The study revealed that the textbooks do not provide sufficient learning opportunities for students to learn Euclidean geometry. Consequently, it can be inferred that the absence of contextual question on the topic of Euclidean geometry in the textbooks hinder their users from solving authentic problems and appreciating the application of Euclidean geometry in real life.
Keywords: Euclidean geometry, Opportunity to learn, Contextual features

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REPRESENTATION FORMS OF EUCLIDEAN GEOMETRY QUESTIONS IN SOUTH AFRICAN MATHEMATICS TEXTBOOKS

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Abstract

The representation of mathematical problems plays an important role in conveying mathematical concepts to students and facilitating their learning process. When interpreting the curriculum, textbook authors adhere to the advice of theorists by incorporating a diverse range of representational forms to improve comprehension. For this reason, a study was conducted to investigate the forms of representation used in Euclidean geometry questions across three South African mathematics textbook series. The study analysed nine approved textbooks from grades 10-12, belonging to the Classroom, Platinum, and Mind Action series, using the Glasnovic Gracin's mathematical activity types framework as an analytical tool. The aim was to examine the various forms of representation (pure mathematical, visual verbal, and combined form) used in promoting opportunities to learn Euclidean geometry. The method of data collection was document analysis, which looked at over 2,300 tasks from both worked examples and exercise questions in the most commonly used mathematics textbooks.

The findings of the study indicated that the distribution of problems across different forms of representation was not balanced in all three textbook series. For instance, the three textbook series placed a greater emphasis on problems presented in a combined form (CM10:88%, CM11:100%, CM12:100%, PM10:94%, PM11:93%, PM12:97%, M10:100%, MA11:99%, MA12:100%) compared to problems presented in pure mathematical or visual forms alone (0%). Consequently, it can be inferred that students did not have adequate opportunities to learn Euclidean geometry through multiple representations of questions. These findings have implications for theory, practice, and further research.

Keywords: Euclidean geometry, Mathematics, Opportunity to learn, Textbooks, Representation form.

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Changing policy, changing Inclusive Teaching: Providing Learning Materials for all?

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Aims and Scopes

Arguments concerning declining reading and writing skills among school children are currently a focal point in Swedish educational policy change. These students are considered to be in need of support for their learning and with support measures being governed by national documents. Access to teaching content is then a key aspect to improve learning progress. Furthermore, a lack of access to high-quality Teaching and Learning Materials (TLM) - such as textbooks, digital resources and other educational media - has been identified as a key reason to the students' dropping capabilities in recent reports and government investigations. This has resulted in a policy debate, and have resulted in an ongoing policy change, where the meaning and intended practice of TLMs is undergoing rather drastic transformations in the educational landscape.

The decisions following from the governmental investigations and propositions on TLM is in its final stages and will likely be ratified during the summer of 2024. Consequently, this will lead to new preconditions for teachers work and children's learning, since TLM is at the heart of teaching and learning in the classrooms. To provide access to high- quality TLMs is an obligation to fulfill by both headmasters, teachers and school agencies in Sweden. Knowledge on how this responsibility works out, and will work out is however uncertain, as research about TLM in Sweden is commonly focused on content and design, rather than on a user-oriented perspective (Graeske 2021).

Responding to this, the aim of the study at hand is firstly to explore how quality and access is constituted in current TLM policy development, and secondly how this relates to how quality and access is constituted in schools governing documents on inclusive education. The study thus investigates how thoughts and ideas about TLMs are articulated in documents concerning the policy change and how these articulations relate to governing documents on inclusive education in Sweden, two important governing areas which both are supposed to enhance quality in and access to teaching materials.

Theoretical Underpinnings and Material

Drawing on the Anthropological Theory of Didactics (ATD), we understand the knowledge production within policy change as taking place within an ecology (Chevallard, 2006). We thereby pay attention to the logos part of the praxeology on TLMs, which means a focus on *scholarly knowledge* and the *knowledge to be taught* (Bosch & Gascón, 2006). The two parts of the ecology we focus on are the area of teaching materials and the area of inclusive education. Our stance on policy research is in line with what Diem et.al. (2019) describe as Critical Policy Analysis (CPA). We thus aim to analyze multiple levels including the constitution and change

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of the TLM policy as well as the distribution of power it results in (cf. Ball 1994). The analyzed materials consist of TLM policy documents, such as government investigations, referrals, referral responses and curricula, and school governing documents on inclusive education.

Novelty and implications

In sum, the current study displays the development of educational policy of TLM, and how that relates to inclusive education in Sweden. The results give insight into dominant knowledge constructs on TLMs and for whom they are intended. Preliminary findings reveal that there is a strong incentive to strengthening access to TLM. We conclude that there is ambivalence between parts in the ecology as there is agreement regarding the need to secure access, at the same time as structural and excluding aspects are prevalent. Implications are that inclusion risks being challenged, Intercultural aspects foreseen, and School segregation possibly enhanced.

References

Ball, S. J. (1994). Education reform: A critical and post-structural approach. Buckingham, UK: Open University Press.

Bosch & Gascón (2006). Twenty-five years of the didactic transposition. In ICMI Bulletin 58, 51–63.

Chevallard, Y. (2006). Steps towards a new epistemology in mathematics education. In M. Bosch (Ed.), *Proceedings of the 4th CERME conference* (pp. 21–30). Sant Feliu de Guixols: CERME 4.

Diem, S., Young, M. D., & Sampson, C. (2019). Where Critical Policy Meets the Politics of Education: An Introduction. Educational Policy, 33(1), 3–15.
Graeske, C. (2021). Läromedelsbruk i skolan. En kunskapsöversikt – perspektiv och forskning. Dnr. Komm2021/00295/U2019:04–26.

Keywords: Teaching materials, Policy, Inclusion

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