

13. SEPTEMBER 2019



15th IARTEM conference on textbooks
and educational media
UCL, Odense, Denmark

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Official programme

11.-13 September 2019

Conference day 1: Wednesday 11 September 2019		
08:30–15:00	Registration	FS.102
09:00–09:30	Opening Erik Knudsen, Rector, UCL University College Jesús R. Rodríguez, President of IARTEM Stig Toke Gissel, Head of Læremiddel.dk	FS.102
09:30–10:15	Keynote: Øystein Gilje	FS.102
10:15–10:45	Coffee break	FS.102
10:45–12:00	Symposia	
	Symposium A: Course designs in digital learning platforms in Primary Schools across countries	C.338
	Symposium B: Using textbooks and learning resources to scaffold students' learning	C.210A
	Symposium C: Danish digital learning platforms	C.201C
12:00–13:30	Lunch	UCL Cantina
13:30–15:30	Parallel sessions A	Rooms
15.30–16:00	Coffee break	FS.102
16:00–18:00	Parallel sessions B	Rooms
18.00-18.30	Plenary session by the IARTEM board - Presentation of the 25th IARTEM birthday volume (overview and structure) - Catch up on the Lisbon proceedings - Ongoing IARTEM research - overview - Reflections on the PHD-day	FS.102

Conference day 2: Thursday 12 September 2019		
09:00–9:45	Keynote: Annekatrin Bock	FS.102
9:45–10:15	Coffee break	FS.102
10:15–12:15	Parallel sessions C Session with school visits.	Rooms
12:15–13:15	Lunch	UCL Cantina
13:15–14:30	Poster session Exhibition of Danish learning materials. Experiments with taste by “Smag for livet”/“Taste for life”	FS.102
13:15-14:30	International research approaches on Art/Music Textbooks and Educational Media An informal meeting to establish contacts and build bridges between researchers interested on Art/Music Textbooks and Educational Media, including co-related investigation domains, such as other arts (e.g. dance, drama, and cinema), aesthetics and art-history	E.142
14:30-15.15	Keynote: Thomas Illum Hansen	FS.102
15:15–15:45	Coffee break	FS.102
15:45–17:45	Parallel sessions D Spanish/Portuguese session	Rooms
18:15-19:15	Tour of Hans Christian Andersen home and museum.	The older part of Odense
19:15	Conference dinner	Odeon

Conference day 3: Friday 13 September 2019		
09:00–9:45	Keynote: Justin Reich Beyond "No Significant Differences": A Reckoning for Race, Advantage, and Online Learning	FS.102
9:45–10:30	Coffee break	FS.102
10:30–12:30	Parallel sessions E	Rooms
12:30–13:00	Conference close	FS.102
13:00-14:00	Break	FS.102
14:00–15:00	General Assembly (IARTEM board)	E.107

Keynote Speakers

11.-13 September 2019

Beyond “No Significant Differences”: A Reckoning for Race, Advantage, and Online Learning



Justin Reich

Assistant Professor, PhD
Massachusetts Institute of Technology
United States of America

Friday 13 September 2019, 09:00-09:45
Room: FS.102

Since the turn of the millenia, “No Significant Differences” has been a consensus position among education research and policymakers (Russel, 2001), perhaps with a 2010 update that “Blended is a Bit Better” (Means et al 2010). Researchers reviewing the literature of online learning and distance education prior to 2010 have generally found that experimental studies show little difference in educational outcomes based on variations in media, with perhaps a modest advantage found for blended approaches. In the past decade, online learning has exploded, and a new generation of observational and longitudinal research studies—large-scale evaluations of online learning as typically practiced in schools and colleges—raises serious questions about this consensus position. While online learning maybe a suitable substitute for already-educated, already-advantaged learners, new evidence suggests that for vulnerable students—from poverty-impacted communities, racial minorities, or first-generation college students—online courses and media may be a poor substitute for traditional, in-person learning. In this keynote, we’ll explore this recent research, and examine the kinds of stances that researchers, policymakers, and instructional designers need to adopt to prevent new forms of online and digital learning from exacerbating education inequalities.

The influence of 1:1 technology on learners' understanding and meaning making requires an investigation beyond its effects on students' achievement.



Øystein Gilje

Associate Professor, PhD
Department of Teacher Education and School Research,
University of Oslo
Norway

Wednesday 11 September 2019, 09:30-10:15
Room: FS.102

In this keynote Øystein Gilje presents findings from the 'Good Example of practice' study (GEPP) in Norway. The project investigated pedagogical practices in 20 different lower secondary classrooms, with a specific analysis of the use of teaching material, deeper learning experiences for students and changes in students' and teachers' interaction. In the keynote, Gilje raises questions around 1:1 technology and how it changes the ways in which we carry out the dialogue in the classroom. What if 1:1 classrooms create less dialogue and collaboration, and more individual work with tools and learning resources?

How to research a textbook, if it is no longer a 'book'?



Annetrin Bock

Research Fellow, PhD
Georg Eckert Institute
Germany

Thursday 12 September 2019, 09:00-09:45
Room: FS.102

In times of digital transformation and increasing datafication our research objective, the textbook, is evolving. Born-digital textbooks will soon no longer only be a compilation of printed text and visuals. Rather, they are becoming adaptable, visually diverse, multi-modal, networked, connected textbooks that address different classroom scenarios and different approaches to learning. Taking new trends in educational media production and distribution into consideration, such as adaptive teaching and learning software or cloud-computing, this evolution will likely continue until textbooks are fully transformed into teaching and learning modules that are distributed via online platforms and can be mixed, reused and shared by educators and learners.

Against this backdrop, one of the pressing questions for future textbook and classroom studies will be, how do we research textbooks, if they are no longer 'books'? Will we be able to use current digital methods or will we need a new and innovative methodology, which responds to the media transformation by adopting its research questions, theoretical background and empirical approach? The keynote speech will discuss the implications for textbook and classroom researchers interested in studying practices, use, effects and content of born-digital textbooks and their reformatted equivalents.

The quality of quality

Toward a semiotics of quality in learning materials



Thomas Illum Hansen

Head of Applied Research, PhD
UCL University College
Denmark

Thursday 12 September 2019, 14:30-15:15
Room: FS.102

What is a good learning material? What do we perceive as good quality within or in relation to learning materials? When we talk about and try to answer these questions, we typically assume a large number of complicated relations and values that are connected with the conception of good teaching, democratic values, agencies, the risk of dehumanization, and, ultimately, the conception of the good life.

The conception of good learning materials is an abstraction. Learning materials are always good for something and for someone and less good for other things and for someone else depending on the specific interaction between actors, materials and technologies in a situation and context.

This presentation attempts to frame and understand the basic normativity in design, use and research of learning materials as a privileged example of how to understand complex and dynamic processes in teaching. The basic assumption is that research in learning materials has a certain prerogative as the focal point for a study of quality in teaching that my analysis will elaborate as a semiotic of quality.

The semiotics of quality will be elaborated and exemplified through a step-by-step analysis of the problem of representation in teaching, a multidimensional quality theory, a sketch of a meta-language on quality in learning materials, and finally different perspectives on research related to the key issue of the quality of learning materials.

The point of departure is the representation problem: How do we bring content into the classroom without fixing and determining it in a school-like form that loses the substantial relation to the surrounding world and reduces the phenomenological qualia? This problem is closely linked to the loss of knowledge and content in teaching pointed out by, among others, Michael Young and Gert Biestas, but in this context, it will be examined as a special semiotic problem in didactics that justifies why learning materials should be assigned more importance in educational research.

Symposium

11 September 2019, 10:45-12:00

Symposium A:

Course designs in digital learning platforms in Primary Schools across countries

Theme: Digital learning platforms

Type: Peer-moderated symposium: The 2-3 groups involved conduct and make peer-to-peer-response among themselves during the session – and include the audience in the seance along the way.

Description/framing: Brazil and Denmark are two countries that have implemented digital learning platforms in the Primary School. These countries have relevant differences in many dimensions, including diverse educational systems and the scholar cultures. Besides that, studies in both countries can contribute to understanding many aspects of digital learning platform as a part of a global process that uses disruptive technologies for teaching and learning (Andreasen & Christiansen, 2017). In particular, the symposium deals with the research question: What characterizes course designs made in and distributed through digital platforms?

From Brazil, Alysson Ramos Artuso (Federal Institute of Paraná - IFPR) studies the discourses about the digital learning materials and the features available for teachers to build courses, as well as the platform affordance and the potentialities of the web. He describes a typical case of a Brazilian digital learning platform, a textbook-oriented platform with many features for school leadership and not so many for teachers.

Stefan Ting Graf, Stig Toke Gissel, Marie Falkesgaard Slot, and Jens Jørgen Hansen form the Danish group, from the UCL University College, University of Southern Denmark (SDU) and Læremiddel.dk. They investigate how learning platforms can be conceptualized as a category in pedagogical theory and what characterizes teachers' course design in a Danish digital learning platform. In particular, the group contributes to developing an understanding of learning platforms as a framework factor for teaching, as a didactic tool for planning and as a place for learning. The discussions include the platform affordance and have potential implications for platform designers, local school authorities, and teachers that use such course builders for teaching and the students' learning on a daily basis.

Wednesday 11 September 2019, 10:45-12:00

Room: C.338

Digital learning platform in Brazil – The examples of Positivo On

Alysson Ramos Artuso

Universidade Federal do Paraná/Læremiddel.dk

Country: Brazil

In contemporary society, digital technologies, especially the internet and mobile devices, break through the restrictions on time and space and becomes a ubiquitous learning tool. Designing teaching environments for digital learning and flexibly applying technology tools seem to be a tendency around the world (Gros & García-Peñalvo, 2016). Brazil is also part of the tendency and some private and public initiatives are growing. One of this initiative is the platform Positivo On, created by a large private Brazilian publishing company. The core of the theoretical foundation to the following analysis is the concept of affordance (Gibson, 2015) and the discussion about the quality of learning materials and the types of them – didactic, semantic and functional learning materials (Gissel & Hansen, 2017). Methodologically, the research is a study case to narrow down a very broad field and analyze indepth the digital learning platform. Positivo On can be understood as a paradigmatic case according to Flyvbjerg (2006) definition. After describing the platform based on the concept of affordance and in terms of interactions possibilities, types of learning materials and web elements, the conclusion is the platform strongly shapes the courses with an affordance that restrains the teacher's autonomy and interaction, with the most part of the materials provided by textbooks published by Positivo.

References

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Shared course designs in digital learning platforms: affordance and patterns of design

Stig Toke Gissel, Stefan Ting Graf, & Marie Falkegaard Slot

UCL University College

Country: Denmark

With the nationwide implementation of learning platforms (LMS) in the Danish public school, teachers' course designs have become shared and visible overnight. The platform designs offer similar yet different affordances vis-a-vis both course design and sharing functions that invite teachers to view, share, re-use and remix course designs and eventually collaborate on them. The sharing can be done individually, within the particular school, school district or nationwide - depending on both the platform and teachers' preferences. Hence, the digital platforms give us a unique opportunity to study teachers' course designs and use of learning resources. Depending on the policy of the local school authority teachers are 'encouraged' to design and share courses in the platform and thus to explicate learning goals, activity sequences, learning resources, and assessments of student work (Binkley et al. 2012).

We present the results of a systematic study of how teachers design courses in a particular digital learning platform, Meebook. The study is based on the collection and double coding of the 102 most downloaded course designs in Meebook. The descriptive data is analysed in the light of Meebook's affordances, previous research and didactical theory. Our analysis focuses on the three main intentions of the introduction of learning platforms for K9-schools. This concerns firstly the use of learning objectives and their assessment, secondly the use of the platform in relation to the intention of sharing teacher-created course designs and thirdly the question of how teachers deal with the integration of multimodal learning materials in the course design. On one hand, the course builder in Meebook seems to affect teachers' course designs strongly, and on the other hand, the course builder does not facilitate didactical reasoning and coherence. The results of the study have potential implications for platform designers, local school authorities and headmasters who deal with the implementation of platforms as well as teachers that daily use such course builders for teaching and the students' learning.

In our analysis, we draw on theory of teaching (Graf, 2017), theory of learning resources (Hansen & Gissel, 2017), the concept of affordance (Gibson, 2015/1986) and previous empirical studies on teaching, task design, and the use of educational resources (Hansen & Bundsgaard, 2013; Bremholm, Hansen, & Slot, 2017).

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Teachers interpretations of Danish as a school subject on learning platform

**Jens Jørgen Hansen, University of Southern Denmark & Stig Toke Gissel,
UCL University College
Country: Denmark**

Teachers of Danish as a subject have the permanent task of interpreting and translating what is important content to teach students. This interpretation activity is visible when teachers plan course designs understood as given form to learning opportunities (Dohn & Hansen, 2018). Learning platforms set a new context for Danish teachers' planning of course design and establishment of learning opportunities in teaching Danish as a subject. This paper is based on a study by Hansen & Gissel where Danish L1 teachers' uses the learning management system Meebook in relation to design courses for Danish L1 teaching (Hansen & Gissel, 2019). The research question is to investigate which patterns of interpretation of Danish as a subject that emerges through teachers planning. Furthermore, the aim is to discuss whether learning platforms has the potential to develop new course designs and innovative teaching.

The analyses of the different course design are based on the theory of Danish as a subject that aims at developing students text competences. Hansen (2012) defines four discourses of text competence in Danish as a subject: 1) hermeneutic text competence where students must learn to interpret texts and develop their personal and cultural identity, 2) communicative competences, where students must learn to communicate through and about texts, 3) creative text competence where students must learn to produce texts and 4) basic text competences where must develop basic text understanding as well as basic skills in reading, writing, listening and speaking. A discourse can be defined as a way of thinking, acting and valuating inside of a particular group (Gee, 1990). Analysing course designs as different discourses provides a basis for understanding teachers' interpretation of Danish as a subject in the new context that a learning platform constitutes.

Empirically the study is based on analyses of 37 course design and shows that half of them focus purely on basic text competences and that the rest contains course designs as a combination of basic text competences and one of the other discourses (except 2 course designs). This shows that teachers planning on learning platforms mainly focus on basic text competences and Danish as a subject becomes something you train. The question is whether learning platforms mainly are supporting knowledge forms that can be trained? Or whether basis text competences have a dominant role in relation to the other hermeneutic-, communicative- or creative text competences?

Referencer

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Symposium B:

Using textbooks and learning resources to scaffold students' learning

Z. Sikorova, I. Cervenkova, M. Vaclavik, P. Bagoly-Simo & B. Knight

The paper reports on an empirical research focused on the problem what role the teaching and learning resources play in scaffolding students' learning, i.e. what support they provide and how teachers mediate it. The following research questions were formulated:

RQ1: How do teachers apply and understand the use of textbooks and other teaching and learning resources for student learning?

RQ2: What strategies supporting learning can be identified in teaching and learning resources?

RQ3: How do teachers use teaching and learning resources to support learning? Theoretical background represents a socio-cultural perspective on learning which enables to view how both the cognitive and social aspects influence students learning. An essential feature of students learning is the zone of proximal development (Vygotsky, 1978), where learning involves internal developmental processing as students interact with people and learning resources in their environment. We understand instructional scaffolding as strategies that teachers use to help learners bridge a cognitive gap or progress in their learning to a level they were previously unable to accomplish. A framework has been developed for analysing scaffolding strategies, based on the combination of scaffolding means, intentions and types of scaffolding (van de Pol, Volman & Beishuizen 2010; Yelland & Masters, 2007; Sikorova & Cervenkova, 2016).

The research used both qualitative and quantitative methods to explore and analyze data, the methods of in-depth interviews with teachers and textbook content analyses have been applied. Based on the results of the qualitative stage, a questionnaire has been developed as a tool for investigating teachers' use of resources and application of scaffolding strategies. The questionnaire will be introduced to the conference participants to invite them to join the research and carry it out in their own countries. In the first phase, content analyses have been conducted to identify scaffolding strategies in Czech printed and digital secondary school textbooks for various subjects (RQ2). The analyses used the developed framework, identifying scaffolding types, intentions and means. Then, two kinds of in-depth interviews with 15 Czech secondary school teachers were applied. First one was focused on the use of the resources (RQ1) and the second one aimed at scaffolding strategies which teachers apply in resources-based teaching (RQ3). The teachers were addressed according to the method of maximum variation sampling, the main methodological tool used for analysing the data was typological analysis.

The results showed that potential scaffolding elements built-in the textbooks were not frequent both in printed and, surprisingly, in digital textbooks, though they could be tracked in textbooks based on constructivist foundations. The findings suggest that form of the text may be less important than concept of the book. It was also apparent that textbooks of different subjects may manifest different scaffolding strategies. The analysis of data on the use of resources concluded that there were two distinct types of teachers, differing in the kind of

the key printed resource used and the purposes of resources use. The analysis of data on teachers' scaffolding strategies suggested that teachers used mainly such scaffolding means as hints, questions and modelling, while they rather neglected feedback on students' learning and metacognitive strategies.

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Wednesday 11 September 2019, 10:45-12:00

Room: C.210A

Symposium C:

Danish digital learning platforms

Themes: Digital materials and digital learning platforms in classroom; Quality in the production system of learning materials; Content-oriented curriculum and learning materials

This symposium brings together three of the leading publishers of learning materials in Denmark and research in learning materials. The theme of the symposium is the digital, subject-specific educational portals that have come to play a great role in Danish high school teaching on all levels and in all subjects.

CLIO-online

Ann-Birthe Overholt Nicolaisen

Educational Innovation Manager

Since 2006 Clio has created a number of innovative services and differentiation tools for the classroom in addition to 45 interactive learning portals for all primary and lower secondary school subjects. Clio bases its work on high user involvement from both students and teachers and on the latest research and development in technology and didactics. Clio's educational technology is currently in use by more than 750,000 students and 80,000 teachers in Denmark and Sweden, and the company has just launched its first international product for English as Second Language. Behind all Clio's solutions lies a strong desire to create better learning experiences for each individual student.

Ann-Birthe Overholt Nicolaisen is working at Clio Lab as an Educational Innovation Manager and she will present our experiences, our current status and our plans for the future in three perspectives: First how Clio collaborate with the research field. Second, how we work hard to get Danish EdTech spread out in the world. And last but not least, how we see the differentiation potentials in Clio's products as a way of offering all students individual support and challenge in order to be able to participate on equal terms, when learning together with others.

Gyldendal

Mikael Pedersen

Publishing director

Since 2011, Gyldendal has developed a product portfolio of educational sites ('fagportaler') that offer purely digital teaching materials for all subjects and all grade levels from 0 through 10. These educational sites constitute the backbone of our publication list, and in many schools they have now partially replaced printed textbooks or supplanted them altogether. In this presentation, publishing director Mikael Pedersen will summarise Gyldendal's experiences from 2011 up to now and glance towards the future. He will also focus on the ways in which the shift from printed to digital teaching materials has benefitted education and comment on the needs that have not been met. Finally, he will offer Gyldendal's take on the elements of future generations of educational sites.

Alinea

Charlotte Staun Christensson

UX Designer

Designing educational platforms with the user

In august 2018 Alinea launched a new educational digital platform covering all subjects and levels in the Danish Primary School. More than 400 teachers and students have been involved in the development process. Through observation, interviews, co-creation workshops and user testing the users have been involved through all steps of the product development. This has resulted in some quite interesting and rather surprising findings on how teachers work and children learn...

Content is designed for students using the latest research on how children learn. Learning concepts such as bite-sized content and brain breaks have been focal points when creating content.

A research perspective on the Danish educational portals Stig Toke Gissel, head of The National Centre of Excellence for Learning Resources, UCL University College

The portals offer teachers and students a wide range of courses and teaching resources that can be adapted by the teacher to their specific needs and that teachers can combine as they see fit. Furthermore, each portal offers specific functions for supporting and scaffolding learning.

From a research perspective it is crucial that we analyze the potential of these portals and explore how teachers and students use them - and what these portals do to both curriculum, teaching and students activities in class. Stig Toke Gissel will characterize the educational portal and point out some potential advantages and drawbacks. Furthermore, findings from observations of teachers' and students' use of the portals are presented.

Wednesday 11 September 2019, 10:45-12:00

Room: C.201C

Parallel Session A

11 September 2019, 13:30-15:30

A1: Spanish/Portuguese

The use of technological resources in the teaching of History: Influence of the ownership of centers and geographical demarcations

Chair: Tânia Maria F. Braga Garcia

Room: C.201A

Time: 13:30-15:30

María José Baena-Sánchez, María de la Paz Prendes-Espinosa and Nicolás Martínez-Valcárcel
Universidad de Murcia
Country: Spain

This paper is part of the research directed by Professor Martínez-Valcárcel and shares (with the paper “Textbooks, teacher’s materials and digital media in the teaching of history: presence and intensity of use by teachers and students”) the same database (2015-16) and questionnaire.

The paper addresses the use and relationships between the functions of ICT and the types of teaching in history. For the functions, we start by reviewing the proposal made by Marqués (2012) and Area (2017), namely: ludic digital or didactic file, didactic digital domain, digital textbook, educational software and elements of expression and educational collaboration. Regarding the teaching of history, we follow the results of Martínez-Valcárcel (2014) and Arancibia and Badía (2015), concretizing it in a transmissive or constructive perspective. The paper analyzes the relationships between these results and the types of ownership of centers (public/concerted) and their geographical distribution in the academic districts established in the Autonomous Community of the Region of Murcia (CARM).

The methodology is framed within qualitative correlational non-experimental designs (Salkind, 2017, p.152), in which information is provided on the relationship that can exist between variables, in our case the ownership of the center and the geographical distribution. For the selection of participants, a cluster sampling and quotas (Salkind, 2017, p.78) were carried out. The sample was obtained from the 136 teaching centers that teach these studies in the CARM (103 public and 33 concerted): 53 students in 39 secondary education centers agreed to participate, which is 28.68% of the total, of which 27 are public and 12 are concerted. The instrument used was a questionnaire of 28 items: 16 closed response (yes/no or Likert scale) and 12 open response.

The main results show that 18.86% of teachers do not use any type of ICT during the teaching process; the internet is principally used as a digital educational file, or DEF(69.81%), the main use of digital media is to raise and lower notes/text comments (71.70%) and master teaching, with or without static ICT, is 83.02%.

Adherence to the EDUCARM digital platform is 61.54% in public schools and 0% in concerted schools (or as a link to its website). The use of the website of the history subject in concert centers is 66.67%, 22.23% more than in public ones.

There is a greater involvement of teachers in public schools towards the dimensions that address constructive didactics: group and individual work, presentations and forums.

Finally, localities with lower density of population have a lower use of ICT in the teaching of the subject. These results show the need to get deeper in the improvement of the use of ICT in classrooms and the study of its use by the owners of the centers and the territory.

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A1: Spanish/Portuguese

Indigenous history and culture in history textbooks in Brazil: norms and practices

Chair: Tânia Maria F. Braga Garcia

Room: C.201A

Time: 13:30-15:30

Diego Marinho de Gois and Tânia Maria F. Braga Garcia

Universidade Federal do Paraná - NPPD

Country: Brazil

The research theme is the use of History textbooks, in a particular situation of school experience: the indigenous villages of Santarém, State of Pará, in the Brazilian Amazon. In this sense, this work is linked to the existence of specific legislation on Indigenous Education and the National Textbook Program (PNLD and PNLD Countryside), as it is the public policy for the evaluation and distribution of textbooks for Brazilian public schools in all school subjects. The aim is to produce knowledge on the theme that has not yet been explored in educational research: the use of History textbooks in indigenous schools, especially in the context of the Amazon, which is the spatial limitation for this research. To meet this objective, the use of ethnography was defined as the methodological approach, including different data production strategies such as participant observation, interviews, documentary analysis and others that may be structured during the fieldwork, from Rockwell's perspective (2009) and Garcia (2001). The first stage of the investigation consisted in the identification of the schools to verify the presence of History textbooks being used in each locality. This research pointed out nine indigenous schools of six ethnicities, which serve 650 students and where 12 teachers work. The second stage, whose results will be presented, consisted in the identification and analysis of the History textbooks that are used in the villages. Although approved in the PNLD, there is criticism about its adequacy and, at this preparatory stage for the beginning of the participant observation, the problem is focused on the contents and images that these materials convey on the indigenous people, considering the legal requirements. The main objective was to analyze the content of the textbooks regarding the elements on the history and culture of the indigenous peoples presented, with the following specific objectives: a) to compare the elements presented in the students' books with the public notice and the evaluation criteria of the PNLD; b) to analyze the guidelines presented to teachers for treating the indigenous matters; and c) to identify the procedures used by the publishers to adapt the books to the requirements of the Brazilian educational legislation, particularly regarding the PNLD notices. The data show the presence of two books that are used in the schools of the region, which will be identified as A and B. In summary, the results of the analyzes show that: a) in both books, although some gaps remained, indigenous populations gained greater visibility in the different periods of the Brazilian History; b) although some prejudices have been eliminated, the indigenous representations still do not contemplate the cultural diversity of the Brazilian indigenous populations. Taking norms and practices into consideration, we will discuss the indigenous theme, identifying the advances and problematizing the remain of stereotypes in some History textbooks. Based on these results, the field research will be able to show how teachers use these books and point out elements derived from the appropriation processes of the subject matter by the indigenous school students.

A1: Spanish/Portuguese

The student's notebook: meanings and History class records

Chair: Tânia Maria F. Braga Garcia

Room: C.201A

Time: 13:30-15:30

Marlene Terezinha Grendel

Secretaria Estadual de Educação SEED

Country: Brazil

The textbook that contemplates curricular subjects from the earliest years of Elementary School up to High School and is distributed to all Brazilian public schools through the National Textbook Program - PNLD, constitutes a very important support material for teachers and students in the dynamics of the classroom. Being part of a specific social group, these teachers and students disseminating and reproducing, to a certain extent, key elements of their local cultures, articulated to others, arising from social world, which are subjected to a constant economic, political, and technological movement, characterising idiosyncrasies of each community whereto they belong. Understanding that in school there is an interweaving of cultures as pointed out by Pérez-Gómez (2004) and ethnographic research as a methodological possibility that allows entering the daily life of a social environment and establish direct contact with elements of the various cultures present in it, according to the theoretical assumptions of Ezpeleta and Rockwell (1995), an ethnographic research was developed with the objective of identifying and verifying the influences that these cultural elements exert in the use of textbooks. The research was developed accompanying the pedagogical action of a Science teacher at a countryside school linked to the State Department of Education of the State of Paraná, southern region of Brazil, as well as through questionnaires answered by the parents or guardians of the students. Being an ethnographic research, which presupposes an extensive period of observation of the actions of a subject or a social group, during nine months, from March to November 2016, weekly the teacher's classes were observed which provided an approximation with the teacher, the students and the local community. The observation showed that the teacher's experience in using the textbook as a resource for her activities was important for the actions developed in the classroom and evidenced the considerable and manifold role that the Science textbook plays at the teacher's daily planning, which was coherent not only with the curriculum organization that emerges from the public policy in vogue, but also with students' background social context. The research analysis also showed how the teacher deploys both texts and images brought by the textbooks as references for students to learn school contents in parallel with local knowledges, experienced by these subjects within their community, as well as with knowledges that arise from media resources. Textbooks, as our reading suggests, were also present in the daily life of each family, understood by parents as a pedagogical resource amenable to transformations over time – especially if the universalisation of their access is taken into consideration. The recognition that elements belonging to the local culture are crucial to classroom dynamics (Rockwell, 1995) has also been an outcome of this research. These elements were often mediated by the teacher through textbooks, which allowed the establishment of associations between knowledges that were either didactic or inherited by the subjects throughout their own trajectory as part of the specific social space whereto they belong – in this case, a countryside community.

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A1: Spanish/Portuguese

Teaching materials in hospital classrooms: a proposal to meet the specific needs of your students

Chair: Tânia Maria F. Braga Garcia

Room: C.201A

Time: 13:30-15:30

Jesús Rodríguez Rodríguez, Yésica Teijeiro Bóo, and Antía Cores Torres

University of Santiago de Compostela

Country: Spain

This article presents a proposal of didactic materials elaborated in the context of a hospital classroom with the purpose of attending to the specific needs of its students. These needs are not only marked by the individual characteristics of each minor, but they must also take into account the circumstances of hospitalization of each pediatric patient, making it possible to respond to some of the objectives of Hospital Pedagogy such as they may be: to favour adaptation to the hospitalisation and illness of the minor, to encourage educational activity in free time within the hospital, to diminish the negative effects generated by the hospital context, to improve the quality of life of the paediatric patient, etc.

The presented experience is located in the perspective of Learning-Service projects, a methodology "that combines learning processes and community services in a well-articulated single project in which the participants learn how to work on the real needs of the environment with the purpose of improving it" (Puig Rovira, Batlle, Bosch and Palos, 2006, p.22). These projects have acquired special significance in recent years in the international context, through which it is intended to combine the development of academic curriculum with community services. (To understand better its meaning, see: Santos Rego, Sotelino Losada and Lorenzo Moledo, 2015). In our case, the students and teachers who participated in the initiative, have been the protagonists of the initiative upon being the main authors of the developed materials.

The first part of this work reflects on the characteristics and particularities of teaching materials in the context of a hospital classroom. Subsequently, the results of some studies are presented that highlight the lack of didactic materials contextualized in the reality of a hospital classroom and the need to contribute with specific designs to adapt the materials to the socio-educational interventions carried out in these intervention spaces.

The second part describes a proposal of didactic materials elaborated jointly by students of the subjects of Hospital Pedagogy and Design and Evaluation of Didactic Materials, both subjects of the fourth year of the Degree in Pedagogy of the Faculty of Education Sciences of the University of Santiago de Compostela.

The main objective of the project was to design proposals of didactic materials in different formats adapted to the needs of the students of one of the hospital classrooms in Spain. Specifically, a small classroom located in the University Hospital Complex of Ferrol (CHUF), which has paediatric patients, mainly, short stay and with mild to medium severity diseases. During the course of the article, the fundamental characteristics of the project carried out are analysed, as well as the main phases through which the design and implementation of the proposed didactic materials have passed and the evaluation of the resources elaborated by the different members of the educational community, which was centred on the observation of the process and implementation of the elaborated materials, the opinion of the students and the evaluation of both the hospital classroom teacher and members of the health staff.

The last part of the article establishes some conclusions regarding the project developed, highlighting the need for this type of initiative to contribute to and improve the quality of life of paediatric patients, as well as some proposals for improvement for future editions. In this part of the work we will also present the main contributions made by the developed project to the different members of the educational community: university professors and students, students of the hospital -main target group of the proposal- and professionals of the hospital.

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A2: Sciences - digital textbooks and learning materials

How do mathematics teachers interact with the mathematic book and how do the use of the mathematics book and other resources influence the teaching?

Chair: Georges-Louis Baron

Room: C.201C

Time: 13:30-15:30

Rune Hansen, Mie E. Jensen, Mette Hjelmberg, Dorte M. Larsen, Stine Dulkan Gents and Mette S. Christensen

University College Absalon

Country: Denmark

The use and impact of mathematics books in classroom teaching have special interest for the community of researchers in mathematics teaching, including how teachers use the books and other resources in their classrooms (Haggarty & Pepin, 2002; Pepin, 2018). The mathematics teacher's intention in using mathematics books is changing, moving towards integrating resources from the internet (Trouche, Gueudet, & Pepin, 2018).

Based on observation and video recordings of classroom teaching, we will answer our two research questions: How does the teacher interact with the mathematics book and other learning resources? How does the use of the learning resources influence the teaching?

We decided to observe and interview three well-established teachers in three different parts of Denmark, in the same class for a period of one year. We have a case-based approach and our analytical focus is the teacher-artifact-mathematic triangle in socio-didactical tetrahedron (Rezat & Sträßer, 2012), focusing on the teachers' instrument mediated activity of doing mathematics and planning mathematics with respect to the teacher-student-artifact triangle, seeing the teacher as an orchestrator. Another analytical focus is Siedel and Stylianides' (2018) identification of six different approaches to the teacher's selection of resources, which we use to analyze the teacher's choice of learning resources.

The preliminary findings indicate that mathematics teachers use a variety of resources in the classroom, where students partly have the opportunity to choose between different kinds of materials and learning objects in order to solve tasks proposed by the teacher. In addition, students are influenced by the multimodality of the textbooks selected by the teacher. Some students seem to benefit from the many possibilities, but others seem to be confused. Our analysis for now shows that to reduce confusion for the students, the teacher's scaffolding is important when different kinds of materials and learning objects are available.

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A2: Sciences - digital textbooks and learning materials

Literature review in the international context on research related to Digital Didactic Materials, Information and Communication Technologies and Physical Education

Chair: Georges-Louis Baron

Room: C.201C

Time: 13:30-15:30

Alberto Sanmiguel Rodríguez, Carmen Denébola Álvarez Seoane and Jesús Rodríguez Rodríguez

University of Santiago de Compostela

Country: Spain

In the last decades we have observed an important advance in the concern for the study of textbooks and didactic materials and, in a special way, we have noticed the proliferation of works related to the study of these resources in the field of Physical Education and the relevance that digital media have taken. We have made a prospective study of documentary review of the research work that has been carried out in recent years in the international context in relation to digital teaching materials, Information and Communication Technologies (ICT) and the field of Physical Education. The review work presented here is part of another larger study in which the different lines of research related to textbooks, didactic materials and physical education in the international field have been reviewed. Taking into account that the scope of the digital didactic materials, ICT, and Physical Education is a field with a large number of research works, we have decided to consider it as a specific field and present the results in this congress.

Firstly, we made a synthesis of the main works found and their classification. For which we have followed a process of bibliographic review of studies that have been published in the last 10 years in various databases such as: Scopus, WoS, Google Scholar, Dialnet, ISOC, Teseo and Redalyc. The congresses, conferences and activities that have recently taken place in nationally and internationally context and that have been directed to the field of Physical Education and digital didactic materials have been taken into account.

In our approach, we start from the idea as it could be seen in the monograph published in the magazine titled Retos: Monographic: The didactic materials, textbooks and Physical Education. , coordinated by professors Raúl Eirín and Jesús Rodríguez, <https://recyt.fecyt.es/index.php/retos/issue/view/3107>) the relevance and influence that teaching materials are having in relation to the field of physical education, specially digital resources. Hence the interest in wanting to deepen and highlight the research work that has been done in this specific area in recent years.

The words that have been considered in the indicated search have been related to: "Didactic Materials", "Curricular Materials", "Digital Materials", "Textbooks", "Digital Resources", "Educational Resources", "Instructional Resource", "Physical Education", "Education Technology" and "Physical education and teaching aid".

Secondly, this contribution presents some initial thoughts on the need to carry out the literature review, in the scenario of a technological development that has meant an important advance in the society and in the educational field. In this sense, it's pertinent to identify the presence of the technology and, specifically, the digital didactic materials in the Physical Education classroom. ICT has given rise to more flexible and meaningful teaching and learning processes, which is why it is interesting to use it in Physical Education classes (Chacón, Castro, Zurita, Espejo & Martínez, 2016). At the same time, they have made easier the access to information, both for students and teachers (Blanco, 2015). It is also a source of interest, because digital competences can help to promote changes in the learning procedures that Physical Education teachers can incorporate into their practices (Prat & Camerino, 2012).

Finally and as a synthesis, we can say that the different research related to digital materials propose changes in the teaching-learning procedures. However, in many cases the ICT resources used or elaborated by teachers do not seem to provide substantial innovations in relation to textbooks and other conventional materials.

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A2: Sciences - digital textbooks and learning materials

Science textbook: (re)signifying its usage in a countryside school

Chair: Georges-Louis Baron

Room: C.201C

Time: 13:30-15:30

Edna Luiza de Souza and Nilson Marcos Dias Garcia

UFPR and SEED/PR

Country: Brazil

The textbook that contemplates curricular subjects from the earliest years of Elementary School up to High School and is distributed to all Brazilian public schools through the National Textbook Program - PNLD, constitutes a very important support material for teachers and students in the dynamics of the classroom. Being part of a specific social group, these teachers and students disseminating and reproducing, to a certain extent, key elements of their local cultures, articulated to others, arising from social world, which are subjected to a constant economic, political, and technological movement, characterising idiosyncrasies of each community whereto they belong. Understanding that in school there is an interweaving of cultures as pointed out by Pérez-Gómez (2004) and ethnographic research as a methodological possibility that allows entering the daily life of a social environment and establish direct contact with elements of the various cultures present in it, according to the theoretical assumptions of Ezpeleta and Rockwell (1995), an ethnographic research was developed with the objective of identifying and verifying the influences that these cultural elements exert in the use of textbooks. The research was developed accompanying the pedagogical action of a Science teacher at a countryside school linked to the State Department of Education of the State of Paraná, southern region of Brazil, as well as through questionnaires answered by the parents or guardians of the students. Being an ethnographic research, which presupposes an extensive period of observation of the actions of a subject or a social group, during nine months, from March to November 2016, weekly the teacher's classes were observed which provided an approximation with the teacher, the students and the local community. The observation showed that the teacher's experience in using the textbook as a resource for her activities was important for the actions developed in the classroom and evidenced the considerable and manifold role that the Science textbook plays at the teacher's daily planning, which was coherent not only with the curriculum organization that emerges from the public policy in vogue, but also with students' background social context. The research analysis also showed how the teacher deploys both texts and images brought by the textbooks as references for students to learn school contents in parallel with local knowledges, experienced by these subjects within their community, as well as with knowledges that arise from media resources. Textbooks, as our reading suggests, were also present in the daily life of each family, understood by parents as a pedagogical resource amenable to transformations over time - especially if the universalisation of their access is taken into consideration. The recognition that elements belonging to the local culture are crucial to classroom dynamics (Rockwell, 1995) has also been an outcome of this research. These elements were often mediated by the teacher through textbooks, which allowed the establishment of associations between knowledges that were either didactic or inherited by the subjects throughout their own trajectory as part of the specific social space whereto they belong - in this case, a countryside community.

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A2: Sciences - digital textbooks and learning materials

Physics' textbook and the real curriculum's production

Chair: Georges-Louis Baron

Room: C.201C

Time: 13:30-15:30

Camila Ferreira Aguiar and Nilson Marcos Dias Garcia

Universidade Federal do Paraná

Country: Brazil

The textbooks are quite present in the Brazilian schools, especially at public schools, supporting and leading the teachers' actions. Although this fact, there has still been little research about it, which justified conducting research about the many aspects related to the textbook. Aiming to analyze the influence that the textbook plays on the production of the real curriculum of a teacher, was developed a research of ethnographic character during the first half of 2017. As an ethnographic approach, it required an in-depth observation of the teacher's practices during her classes, which is why the researcher's presence at school was necessary for a reasonably large period, as argued theoretically by Rockwell (1995). As reference, were consulted authors that analyze the textbook's presence in the teaching practice's organization (BATISTA, 2005); the textbook as an artifact of the teaching work's control (BONAFÉ, 2008); as a determinant of school practices (TORRES SANTOMÉ) and as a translator of the official curriculum (SACRISTÁN, 2000). Methodologically the research consisted of attending and recording details of classrooms and interviewing a Physics teacher at a public school in Curitiba, Paraná state, Brazil (AGUIAR, 2018). It was followed four of her classes, totalizing 81 classroom lessons and about 4,050 hours of observation. The research sought to identify how the textbook was introduced in the classes' activities, the functions played by it and to infer the pedagogical and epistemological conceptions that supported the teacher's practice. Furthermore, we also analyzed the teacher's planning, the textbooks indicated for the students' use in this planning and the teacher's textbook used at her classes. During the observation period, it was verified a regular presence of the textbook in classes, that provided theoretical support to the teacher, exercises and reading for the students and play as a model for them evaluation. The teacher's activities revealed a solid influence from a textbook that was different from the one recorded in the teacher's work plan and the one that students used regularly. Later, during the interview, the teacher answered that she was used to the oldest textbook, which reinforces the role of tradition in her activities. The results pointed out that the textbook played two of the functions indicated by Choppin (2004): the referential one, using the theoretical-methodological sequence, and the instrumental one, predominant during the observed classes, through the emphasis on proposed and solved exercises. The results also showed that the teacher used the textbook as a controlling element of classroom activities and indicates a mismatch between the relational conception of teaching, foreseen in the teacher's planning, and the current use of the textbook, revealing the teacher's empiricist conception of teaching. In this sense, it was also apparent that the textbook used by the teacher had directional characteristics that was adequate to her conception of teaching. The research confirmed the considerable influence that the textbook had on the planning and development of the real curriculum practiced by the teacher, a result that corroborated our research hypothesis that the textbook is a curricular guide in the classroom.

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A3: Image and representations

Foreigners, pilgrims, merchants and travelers – Images of difference within the volumes of the Fund INDIRE

Chair: Péter Bagoly-Simó

Room: C.312

Time: 13:30-15:30

Alessandra Anichini

INDIRE

Country: Italy

Foreigners, pilgrims, merchants and travelers ... How was the “difference” represented for the new generations, in the long course of the process of Italian national identity-building? How has adult normativity shaped children's literature since its origins?

We present a short journey through various children's literature books and textbooks from the second half of the 19th century and the first half of the 20th (preserved in Florence, in the INDIRE antiquarian fund), with the aims of understanding the phenomenon of the perception and representation of the stranger, her/his movement, and her/his migration during a century of great transformation. Children's literature such as textbooks published in those years strongly contribute to creating a stereotype that profoundly influenced the politics: education in welcoming, tolerance, in the name of “the common species”, but also, on the other hand, education in rejection, and intolerance in the name of a “patriotic” sense of identity that is deemed indispensable to build and strengthen the idea of “patria”.

The choice of volumes analyzed is based on the catalog of the fund that INDIRE preserves as a legacy of the School Museum. We focus in particular on texts dating from 1836–the year in which the most famous textbook for Italian schools of the 19th century was published (*Giannetto* by Luigi Parravicini)–until 1938, the year in which the racial laws were promulgated, a symbolic act of a process of radical exclusion of diversity, in the name of identity-building.

The analysis of the volumes in question (first textual and also iconographic), provided for a categorization of the meaning of “foreigner”, identifying different definitions: “foreigner” understood as occupying the national soil, the exile, the emigrant, as well as the traveler for pleasure or profession, the marginality in all its forms, from the beggar to the wandering circus.

The numerous “didactic” descriptions of the diversity that we offer, taken from volumes of great diffusion in the years in question, were always aimed at teaching children how not to be different, or, at best, how to re-enter the established order even if they are. What we offer is a brief survey of imbalance, inequality and asymmetry which allows us to deepen, from a specific point of view (texts for children) the concept of discrimination generated by nationality, social condition and sense of race. The survey is only the first attempt at an in-depth reading of our bookseller heritage, which could include further thematic research as well as comparative surveys of funds from other institutions.

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A3: Image and representations

The representation of Nelson Mandela in selected grade 12 history textbooks

Chair: Péter Bagoly-Simó

Room: C.312

Time: 13:30-15:30

Johan Wassermann and Adrian van Niekerk

University of Pretoria

Country: South Africa

Nelson Mandela is South Africa's best-known and most celebrated historical figure. This study, situated in the interpretivist paradigm and using context analysis, engaged with the question of how Nelson Mandela is represented in selected grade 12 South African history textbooks. Various representations emerged from the analysis. All representations constructed a wholly positive image of Mandela. He was represented as a prisoner, a celebrity, a martyr, a leader, an intellectual, an activist, a sage, a negotiator, a peacemaker, a saviour, and a reconciler. He was also represented as having strong personal attributes such as being principled, firm, determined, unselfish, uncompromising, compassionate and forgiving. He was closely associated with the concept of freedom and the idea of a prototypical South African. We argue that that all these representations can be gathered into one overarching representation – Mandela as a messiah. We further argue that Mandela's representation as a messiah fulfils the social need of uniting a post-conflict society which is still in the process of constructing a new national identity. The goal of nation-building is embedded in the curriculum which informs the content of the textbooks. In pursuit of this goal, textbooks are used as a powerful medium in achieving such ends. In addition, by representing Mandela as a messiah, textbook publishers give the South Africa public what it wants, a myth that will make South African learners feel good about themselves and their country and a prototype citizen to aspire to.

A4: Arts and Music

Didactic materials and their ways of use during preparation for art education lessons at primary school

Chair: Eric Bruillard

Room: C.338

Time: 13:30-15:30

Miloš Makovský

Jan Evangelista Purkyně University in Ústí nad Labem

Country: Czech Republic

This paper deals with didactic materials, or more precisely, with how art education teachers use them to prepare lessons in primary and lower secondary schools. Didactic materials are here understood as printed publications that can be used by the teacher in preparation for their lesson. Accordingly, they are not only textbooks but also non-fiction and fiction, art and craft activities idea books or grey literature (academic qualification works, collections of conference volumes or work and worksheets from museums and galleries).

The subject of art education in the Czech Republic is characterized by a high percentage of uncertified teachers and by the almost complete absence of textbooks and teaching texts with valid approval by the Ministry of Education, Youth and Sports (Valeš, 1997; Slavík, 2005; Brücknerová, 2011). For that reason, we focused on primary school teachers' preparations for their lessons and on finding out what role didactic materials play. In particular, we sought the answer to the question: In which ways do teachers use didactic materials during preparation for art education lessons at primary schools? A mixed research design was chosen, specifically explanatory sequential mixed methods design (Creswell, 2014), to allow us to better capture (quantitative phase) and then describe (qualitative phase) this largely unexamined area. The quantitative phase of the research was realized through a questionnaire addressed to 4110 primary schools in the Czech Republic. It was submitted by 720 teachers. We acquired basic information about the publications teachers use for lesson preparation: which titles, in which ways teachers use them most often, and on which criteria they base their choice. In the answers, 162 teachers showed interest in further cooperation and provided their contact information. From those participants, we addressed participants for the second phase. The aim of the second phase was to deepen the answer to the above research question and to enrich the quantitative data with new connections. Twelve semi-structured interviews were held with teachers. (Their selection was based on their length of practice in the field, the grade they teach, their expertise/non-expertise and the size of the school/town/city that they work in. They also represented different regions.) Transcripts of the interviews were analysed through focused coding (Charmaz, 2006). The results were categorised into three scales with six different modes in which respondents use specific didactic materials (author scale: inspiration vs. the manual; respect scale: authority vs. the material; orientation scale: the reference book vs. the journal). Based on the research findings, the role of didactic materials in the community of practice of art education teachers - or rather in the functioning of the professional community of the whole field- was discussed.

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A4: Arts and Music

From the wall to the page: How do school textbooks use paintings?

Chair: Eric Bruillard

Room: C.338

Time: 13:30-15:30

Anne Chauvigné

University of Cergy-Pontoise

Country: France

The words used to refer to the type of book we are talking about (in English “textbook” and in Spanish “libro de textos”) would be enough to make my subject a priori... off-topic. Indeed, the present research is focused on works of art, and especially paintings. The images I am interested in were not destined to be teaching materials. As works of art, they were conceived outside of the school framework (museums, places of political power, private homes, etc.) and are now transposed into another context of perception to satisfy another goal: the teaching of foreign languages and cultures. The present study aims first of all to show what explicit or implicit discourse on art and history are conveyed by textbooks; but also to what extent these disciplines can contribute to students’ knowledge of a foreign culture and their intellectual training. It questions the process of didactic transposition carried out by textbook designers, who are specialists in the language but very rarely in history and art, when they integrate these disciplines into their books.

The present study is focused on a corpus of textbooks intended for teaching Spanish as a foreign language in the secondary school French system. To narrow the scope of this presentation, I will focus on a corpus of 10 textbooks, which deal with the meeting between Christopher Columbus and the Native Americans in 1492, using Art at least once. The study is structured around three axes:

- an analysis of the editorial treatment of the works of art (layout, dimensions, quality of reproduction, technical specifications) which constitute in themselves an implicit discourse on art;
- an analysis of the works of art chosen, particularly questioning the nature of the documents chosen to represent the event, their chronological distance from the event, the author’s relationship with the event, and the link between the various documents;
- an analysis of pedagogical and didactic discourses developed to enable access to knowledge and understanding of artistic and historical facts. Through this analysis, I seek to identify the point of view of the textbook designers and the role of students in the reading and analysis of the works of art.

The first results show an unequal editorial treatment of works of art, the constitution of a corpus of documents that favours an often biased view of history, in which little is called into question by the didactic and pedagogical discourse. The variety of the corpus of paintings allows students to discover the artistic richness of Spanish-speaking countries. But the scope of the work on art over the past few decades in the teaching of Spanish in France is also limited by the insufficiency of critical reading of the artworks, the lack of historical sources and the limitations of the role assigned to students by textbook designers.

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A4: Arts and Music

Chart protocol design for art textbook analysis

Chair: Eric Bruillard

Room: C.338

Time: 13:30-15:30

Guilherme Romanelli and Mauren Teuber

Federal University of Paraná

Country: Brazil

The theme of this ongoing research is the design of a content analysis support for art textbooks. Its main research question is: How to build a suitable research instrument to study art textbooks that enable a general panorama yet bringing specific data. The stimulus for this research comes from three main challenges in studying art textbooks: 1. those textbooks combine four different art subjects (Visual Arts; Music; Drama; and Dance), which is a particularity in Brazilian public education, but is also seen in other cultures; 2. the books aggregate a wide variety of educational support for art, e.g. written texts, art images, songs, drawings and schemas, challenging its definition as textbooks (Romanelli, 2015); and 3. most part of the researches made on art textbooks are based on a restricted analysis due to domain centered works (Schlichta, Romanelli, Teuber, 2018). The methodology followed in this investigation is defined as a research tool design (Shahi, 2015) and is divided in three main steps: 1. exploratory studies on art textbook researches; 2. research protocol development; 3. chart protocol test and adaptation (actual stage); and 4. adoption of the protocol in empirical research with public art textbooks. The present research is being conducted by professors from two different Brazilian universities: Federal University of Paraná (UFPR) and Paraná State University (UNESPAR), and also includes undergraduate and graduate students from both universities. Based on the content analysis chart designed proposed by Martínez-Valcárcel (2018) created to study history textbooks, this research adapted that model to study art textbooks. Using the same Microsoft Excel platform, the new design brings a combination of vertical and horizontal references. The horizontal lines correspond to each page of the analyzed textbook, having, as result, an overview of all the pages. The vertical columns are related to five main domains (textual resources; iconographic resources; audio-visual resources; activities; articulation between different fields), 13 under categories and 69 specific issues. To exemplify the hierarchy of the chart design, the 'activities' domain (activities proposed to de students) is divided in two under categories: 'purpose' and 'form of participation'. 'Purpose', is divided, in turn, into 'postulative', 'inquisitive', 'reflexive', 'investigative', 'evaluative', 'art production', and 'field activities'. On the other hand, 'form of participation' is divided into 'individual' or 'collective'. Beyond the adjustments made on the original model, the proposed chart also introduced the concept of visual references in the grid: each occurrence is noted by different colors in depending on the number of time it is detected in the pages. Until the actual stage of the research, it is possible to present some preliminary results: 1. the feasibility of this grid protocol allows researchers to have a better general view of the analyzed textbooks; 2. the portability of the collected data to research programs, e.g. Atlas.ti; 3. the availability of a visual map of the analyzed textbooks in one single sheet of paper, since each number correspond to a color, and its location on the chart indicates some particular features of the textbook under a quick overview.

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A4: Arts and Music

Research trends on music textbooks according to the first Symposium of Music Education and Didactic Materials

Chair: Eric Bruillard

Room: C.338

Time: 13:30-15:30

Rosa Vicente-Álvarez and Guilherme Romanelli

Universidade de Vigo

Country: Spain

This ongoing research aims to present an overview of the current researches made on music textbooks and educational media in several countries of Europe, Asia and America. In order to build this research database, the proceedings of the Music Education & Didactic Materials Symposium were taken as study object. This Symposium took place in January of 2019 in the University of Santiago de Compostela, Spain. It was the first known scientific meeting to discuss textbooks and educational media specifically related to Music Education. Even if it is not possible to attest that the scientific papers presented at the symposium portray the reality of research on Music Education didactic materials all around the world, they certainly bring a present and international glimpse of researches. The research question that orientates this work is “What are the current international tendencies in textbooks and didactic materials for Music Education?” The methodology undertaken is the content analysis of the papers assembled in the proceedings of the symposium. A systematic overview was made by two researches from Spain and Brazil with all the proceeding’s papers. A first categorization took the seven main areas proposed by the Symposium as categories of analysis: Analysis of informatic applications: their practical use in music education; Textbooks and didactic materials in music education; Teacher training and educational practice for the knowledge, use and assessment of didactic materials in music education; Design of didactic and music materials; Selection, assessment and definition of didactic and music materials; Standards in didactic music materials and practice; and Historic view in relation to didactic and music materials. After a first screening of the papers, a second group of categories was needed, since several papers didn’t satisfactory fit to the topics proposed by the symposium guidelines. The new data organization didn’t divide printed or digital supports as different categories, since the boundaries between both are tenuous. The new categories of analysis are a crossing between (a) design/writing and (b) use of didactic materials and four main scenarios for Music Education: regular schools; specialized schools; teachers’ training; and relation with other fields. The preliminary results make clear that a frame of categorization is mandatory when studying Music Education textbooks and Educational Material. The first challenge is to define a textbook for Music Education, a demand that is related to the fact that a simple music sheet can be used as a didactic material and even being produced for specific pedagogical purposes (Romanelli, 2015). This fact brings a wide amount of materials that can be considered as didactic, thus very different in their nature and use, bringing categorization challenges. The second result we can cognize is the lack of uniformity in the researches related to music textbooks and educational media. By one hand, this presents a richness of Music Education scenarios and a mosaic of cultures. But, it also brings a challenge in comparing different scientific approaches, since the terms for methods are so diverse, even when they are related to a same theme or scientific approach.

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A5: Languages

Criteria for designing teaching and learning resources bridging curricular disconnects in English at Danish primary school level

Chair: Zuzana Sikorova

Room: C.332

Time: 13:30-15:30

Benthe Fogh Jensen and Susanne Karen Jacobsen

University College South Denmark and University College Copenhagen

Country: Denmark

This paper aims to present a set of criteria for the production of teaching and learning resources for English as an additional language at Danish primary school level.

The criteria developed have been informed primarily by a critical participatory action research project (Kemmis, McTaggart & Nixon, 2014) carried out in 2018 and 2019. Theoretically, this paper positions itself in the field between foreign language and bilingual education and pedagogy, focusing on genre and register analysis, sociolinguistics, functional linguistics and sociocultural theories of language and literacy development (Derewianka & Jones, 2016; Halliday & Matthiessen, 2014)

Hence, the research question is: How can a critical participatory action research project serve as a vehicle for the reconceptualization and transformation of current methods when it comes to designing teaching and learning resources for English as an additional language in Danish primary schools?

The empirical data consist of classroom observations, teacher and student interviews as well as student text analyses. As for classroom observations and teacher and student interviews, a thematic analysis has been applied in order to ensure analytical generalization and transferability of the findings. Thus, a number of themes relevant for our teaching and learning resource criteria have emerged. As for the student text analysis, the dimension of specialization from Legitimation Code Theory has been employed in order to uncover which kind of knowledge is being promoted by the students, and lexico-grammatical resources from Systemic Functional Linguistics to capture the specific language choices.

The analysis of classroom observations and student/teacher interviews in the reconnaissance phase of the critical participatory action research project revealed intracurricular disconnects between language input and students' expected language output as well as a lack of meaningfulness and relevance to students' own life worlds.

The focus of the subsequent action initiative thus became the scaffolding of students' language output using approaches informed by genre pedagogy, modelling meaningful content, thereby allowing the students to position themselves as knowledgeable contributors of the field in question. Our aim was to support students' linguistic and cognitive development, moving from basic interpersonal communication skills (BICS) to more cognitive academic language proficiency (CALP)-informed language (Cummins, 1980/2001). Preliminary findings from classroom observations during the action initiative phase and concluding student and teacher interviews indicate that the provided scaffolding of the students' expected language output has had a positive influence on their text production and attitudes towards language learning. Furthermore, approaches informed by genre pedagogy were acknowledged by the teachers as very useful and meaningful.

The learner text analyses informed by specialization from Legitimation Code Theory (Maton et al., 2017) and the lexico-grammatical resources from Systemic Functional Linguistics (Halliday, 2014) show a development towards a knowledge code with the use of ideational, interpersonal and textual lexico-grammatical resources which position the learners as more linguistically competent. In other words, the texts show signs of an emerging CALP.

The focus of our presentation will be a discussion of the application of the criteria derived from this data when designing teaching and learning resources.

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A5: Languages

Ideology and linguistic diversity: a problematization on the studies that involve the ideology and the textbooks of languages in Brazil

Chair: Zuzana Sikorova

Room: C.332

Time: 13:30-15:30

Deise Cristina de Lima Picanço
Universidade Federal do Paraná
Country: Brazil

This paper presents partial results of the project "The linguistic and cultural diversity in language textbooks published by Spanish publishers: a comparative study between Spain, Brazil, Argentina and Mexico". This project is a research activity carried out in the Interdisciplinary Program of Post-graduation in Applied Linguistics of the Federal University of Rio de Janeiro. This project articulates studies that involve linguistic ideologies and textbooks. We work with the notion of ideology elaborated by Voloshinov and the authors of the Circle of Bakhtin. We begin with the analysis of the notions of ideology and didactic material used in the studies conducted between the 1980s and 1990s: "The didactic book in question" (Freitag, 1989) and "The Ideology in the didactic book" (FARIA, 1991). Next, we discuss the contemporary debates about the relationship between ideology, linguistic ideologies and didactic publications. We study its implications for the preparation, production and evaluation of didactic materials. To carry out this discussion, we establish as important references the relations between language (gem), ideology and culture (VOLOCHINOV, 2017); identity and society, especially between cultural industry and globalization (THOMPSON, 1990); and in the field of Applied Linguistics (LA), the transgressive and undisciplined perspective, in an anti-hegemonic agenda. The research methodology is based on the documentary analysis performed from the enunciative perspective of the Bakhtin Circle. As analysis categories the linguistic ideologies were defined as described by WOOLARD and KROSKRIT (1998). We start from an understanding that the dynamics of postmodern societies with the acceleration of changes in the technological world has put in check essentialist, nationalist and hegemonic visions. In addition to this discussion, we have defined as one of our objects of analysis the Portuguese language textbooks (as national language) approved in the National Textbook Program and published by transnational editorial groups of Spanish capital: SM and Santillana. We intend to understand how these publications respond, on the one hand, to the economic demands for a generic and homogeneous curriculum and, on the other, to the requirements of the PNLD that advocate a citizen education that privileges the socio-cultural context of the student. These publishers entered Latin America heavily from the 1990s and changed the profile of national publications. There are studies (CASSIANO, 2007) that point to a possible Spanish neocolonization in Latin America. However, it is still necessary to study the ideological implications of this movement of Spanish capital on the field of language teaching, so sensitive to political and ideological aspects. This communication, therefore, connects with the glotopolytic perspective (DEL VALLE, 2017) because it understands that didactic materials constitute linguistic instruments (ARNOUX & DEL VALLE, 2010), insofar as they respond to regulatory regimes on language, subjects, social practices and cross-cultural relationships. The books analyzed so far are from Portuguese Language: "Being Protagonist" from Editora SM, "Se Liga na Língua" and "Português: contexto, interlocução e sentido" from Editora Moderna (Fundação Santillana). The analyzes indicate that although texts of different genres are presented, a) there is still a concentration of productions of authors and vehicles of the southeast region; b) there is little representation of the quilombola and indigenous communities and the peripheries of the great Brazilian cities. These analyzes point to a tendency in both Spanish and Portuguese to present "diversity in unity" as a strategy to maintain some variants and cultures as hegemonic references for language teaching.

A6: Intersectionality, citizenship and diversity

Contradictions between Inclusion and Differentiation. Textbooks for Primary Education in Germany

Chair: Ommund C. Vareberg

Room: C.317

Time: 13:30-15:30

Yuki Nakazono

Kawamura Gakuen Women's University

Country: Japan

This paper focuses on textbooks for German elementary schools (*Grundschule*) after the 2000s. In Germany, primary education has a specific character that the other educational stages don't have: it is the only educational stage where children can learn together without any kind of tracking. In most states (*Länder*), a two- or three-tiered school system begins in lower secondary education and even in comprehensive schools (*Gesamtschule*) it is usual for children to be instructed in differentiated classes on achievement.

After the 'PISA shock' of 2001, which revealed the achievement gap among children according to socio-economic status and social background, curriculum policy for primary education in Germany has largely changed. National education standards for German, mathematics and first foreign language which describe competencies to be achieved by children on completion of elementary schools were introduced from 2004. The quality of curriculum is assessed more and more on its output rather than its input.

Since the 1960s, textbook development in Germany has changed greatly: textbooks began to be regarded as workbooks (*Arbeitsbuch*) which should support children in inquisitive and creative learning through well-structured working tasks and method. After 2001, new requirements emerged for elementary school textbooks, which are not only to support individual learning with differentiated learning materials and tasks (because of the heterogeneity of children 'discovered' after 2001) but also pursue cooperative and inclusive learning (because of the inclusive character of elementary schools). In this context, many new textbooks series with key concepts either of differentiation or inclusion were developed, especially after the late 2000s. The Textbook of the Year award presented by the Georg Eckert Institute for International Textbook Research to the best textbooks in Germany annually since 2012 has also stimulated the development of innovative textbooks.

But what does it mean for textbooks for primary education to be differentiative and inclusive at the same time? In this paper, working tasks in representative textbooks series for German, mathematics and social studies (*Sachunterricht*) for primary education published after 2000 were qualitatively analyzed as follows:

German: *Zebra* (since 2007 by Klett Verlag, awarded Textbook of the Year in 2014), *Niko* (since 2014 by Klett Verlag), *Lesefreunde* (since 2001 from Volk und Wissen Verlag);

Mathematics: *Das Zahlenbuch* (since 1994 by Klett Verlag, awarded Textbook of the Year in 2017), *eins, zwei, drei* (since 2011 by Cornelsen Verlag, awarded Textbook of the Year in 2014), *Mathefreunde* (since 2010 by Volk und Wissen Verlag);

Sachunterricht: *Zebra* (since 2009 by Klett Verlag), *Niko* (since 2017 by Klett Verlag), *Umweltfreunde* (since 2001 by Volk und Wissen Verlag).

From the analysis, it is clear that the apparently inclusive textbooks are exclusive insofar as they are based on the idea of competency.

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A6: Intersectionality, citizenship and diversity

Racial structures in school textbooks and what we can learn from them

Chair: Ommund C. Vareberg

Room: C.317

Time: 13:30-15:30

Angerd Eilard

Kristianstad University

Country: Sweden

This paper presents the results of a pilot in an ongoing Swedish textbook project, intended to systematically study the contents of existing teaching materials that have been used during the past decade, published after the 2011 education policy reforms in Sweden. The research focus is primarily on notions of Swedish self-image in the textbooks. The overall purpose is to follow up previous textbook studies regarding aspects of (Swedish) identity/nationality, in order to provide updated knowledge about the content of textbooks in general, during the present curriculum and in comparison with earlier curricula. What is being highlighted in the textbooks/teaching materials during different periods of curricula, what does it mean and what does it teach us about ourselves?

Empirical data is collected primarily by reading the textbooks, and discourse analysis is applied to detect patterns as well as deviations in the texts analysed. Discourse analysis is a theory as well as a method frequently used to analyse official texts (e.g. Winther Jørgensen & Phillips, 2000), for instance schoolbooks. It allows highlighting of the content of the texts in relation to the contemporary context. Thus, the textbooks are also considered in relation to other (con)texts, such as the national curriculum and current textbook research (e.g. Carlson & Kanci, 2017; Knudsen, 2009). The time span coincides with the period in which populism and anti-democratic movements have once again emerged in society, and the concept of racism that was previously dismissed in Sweden has again been put into use (Hübinette & Lundström 2014). Thus, the textbooks of the pilot were also discussed in relation to the theoretical concepts of whiteness (e.g. Knudsen, 2009) and (anti)racism (e.g. Hübinette & Lundström, 2014).

The results of the pilot to be presented are based on findings from three chemistry textbooks published in 2011 and 2015. The purpose was both to gain deeper understanding of findings in previous textbook analyses: for example, one that was presented at IARTEM 2017 (in turn, based on an earlier evaluation that was originally carried out by the Swedish Schools Inspectorate) and to put the previous results on trial. The earlier studies concluded that the books that were originally assessed revealed traces of a symbolic ethno-racial structure (Eilard, 2018). Some of those books, however, were published some 15–30 years ago, which is a rather interesting discovery as such, since the evaluation was conducted at the beginning of the current decade. Therefore, I wanted to assess and compare them with later textbooks in the current schoolbook field, and in particular later editions of a few of the books that were included in that previous study (Eilard 2018).

Surprisingly, the pilot confirms and reinforces the results of previous studies, thus highlighting some critical aspects of textbook content, regarding what can be considered as racial structures, in the shade of so-called contemporary blindness in the form of antiracism.

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A6: Intersectionality, citizenship and diversity

From theoretical construct to learning material, from learning material to teaching and learning, and the bottom lines: perceived and measured quality

Chair: Ommund C. Vareberg

Room: C.317

Time: 13:30-15:30

Stig Toke Gissel and Thomas Illum Hansen

UCL University College

Country: Denmark

The KiDM-project (Quality in Danish and Mathematics) was a large-scale intervention project (172 schools) that aimed to develop, operationalize, and test inquiry-based approaches to teaching literature and mathematics. In Danish (L1) an inquiry-based approach was developed based on a phenomenological framework and existing research on various aspects of literary teaching, inferences, dialogues, and literary interpretation. The approach was tested in three rounds of randomized controlled trials (RCT), and to gain a deeper understanding of teachers' and students' use of the learning materials created for the intervention interviews, observations and surveys were carried out.

In this presentation, we wish to reflect on different aspects and perspectives of designing learning materials for teaching literature in grades 7-8 in Denmark.

First, we will present the principles of our approach to teaching literature.

Secondly, we will present a series of dilemmas. The dilemmas are associated with designing learning materials for teaching interpretation of open works of fiction and the logic of the RCT:

- How can we scaffold students' inquiry of ambiguous texts without closing the texts?
 - How do we support the teacher in facilitating student inquiry and classroom dialogue in ways that are sensitive to both the ambiguity of the texts but also respects the text base?
 - How can we establish a rather homogeneous intervention that is implemented with a high degree of fidelity for the measurement of effect in the RCT-study, whilst giving room for teacher scope of action and reflection?
- Our answer to these dilemmas we will term guided openness.

Thirdly, we will present the results of the RCT-study.

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A6: Intersectionality, citizenship and diversity

Analyzing metaphors of gender representations in Turkish foreign language textbooks

Chair: Ommund C. Vareberg

Room: C.317

Time: 13:30-15:30

Ezgi Agcihan

Republic of Turkey Ministry of National Education

Country: Turkey

This paper examines gender representations by analyzing the metaphors in Turkish Foreign Language Textbooks that are published by Ministry of Education that are used to teach Turkish to Adult Refugee Learners. The intention underpinning these initiatives was to nurture a view of gender equality based consciousness through the introduction of more positive gendered images in Turkish Language Textbooks. However, the study discussed in this paper discovered that Turkish language textbooks are still embedded with gender-biased messages and stereotypical representations of male and females through metaphors. Gender biases in 18 Turkish Foreign Language Textbooks and Workbooks (Urdu, English and Social Studies) from Level A1 to C2 were analysed with the help of a qualitative content analysis approach. The paper draws attention to the insouciant approach taken by the MoNE towards the goal of gender equality. The study found that, despite the prevailing claims of achievements, the new textbooks are ideologically invested – and contribute to the perpetuation of gender inequality. In this context, the gender blindness of the curriculum designers and textbook authors is a matter of serious concern.

Parallel Session B

11 September 2019, 16:00-18:00

B1: Languages

How do Senior High School Mandarin textbooks demonstrate competence-based design? The viewpoints from editors in Taiwan

Chair: Andy Smart

Room: C.201A

Time: 16:00-18:00

Han Yu Li

National Academy for Educational Research, Center for Textbook Research

Country: Taiwan

According to Taiwan's latest Curriculum Guidelines of 12-Year Basic Education: Language Arts-Mandarin (2018), the goals of senior high school Mandarin education include language proficiency, literary competence and cultural education. It can be seen that senior high Mandarin education not only aims for basic language education in listening, speaking, reading, and writing but moves toward cultural qualities of flexible language use, problem solving, and citizen awareness.

The implementation of the ideal curriculum is strongly related to how editors interpret and transform the key elements of curriculum reform (Goodlad, Klein, & Tye, 1979). The 12-year Basic Education curriculum reform symbolizes a paradigm shift in teaching and learning, from teacher-centered to student-centered learning. How textbooks demonstrate competence-based design is one of the key points of the curriculum reform. Therefore, it is necessary to investigate how publishers transform comparatively abstract ideas into concrete and feasible texts of learning.

Starting from the viewpoint of the editorial side, this study targets five textbook publishing companies and does in-depth interviews with them. Two interviewees are chosen from each company: an editor in chief and an editor who is also a senior high Mandarin teacher. It is supplemented by an analysis of the five versions of the textbook in order to understand how textbooks respond to the concept of competence. The interview materials are first recorded in the form of transcript, then categorized and organized into topics, and analyzed and discussed. The analysis and investigation do not compare or scrutinize the advantages and disadvantages of the different versions but consider the current status and problems of how textbooks implement the Guidelines.

The compilation principles of the Guidelines state that, "The content of each lesson can be attached with sections of title explanation, author, annotations, question discussion, appreciation and analysis, and extended reading." "Appreciation and analysis" and "extended reading" are new items. Most versions use this as their structure (Version B and Version D); some of them add a "learning focus" (Version A), add an introduction at the start of the lesson, reading test, and knowledge + (Version C), or delete the appreciation and analysis part but add questions, box, and writing exercises (Version E). The "extended reading" section not only provides a reading list but a brief book introduction (Version B and Version D), helping students read and study on their own, or the section provides bibliography plus multimedia extended learning materials such as music and film (Version E).

The following sums up the approaches most frequently mentioned by the publishers: covering cross-disciplinary issues through diverse article selection, strengthening understanding and thinking through inquiry, and combining contemporary issues through "appreciation and analysis" or "question discussion," and displaying the competence-oriented spirit in teacher's guides. Finally, this study proposes reflection on three aspects: how the Guidelines adjust the boundary between flexibility and regulation, whether learning competence should be implemented in textbooks or teaching, and how to assess students' language competence.

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B1: Languages

Valuing writing in higher education. The publishing history of an influential textbook in academic writing in Norway and Denmark

Chair: Andy Smart

Room: C.201A

Time: 16:00-18:00

Iben Brinch Jørgensen and Anne-Beathe Mortensen-Buan

University of South-Eastern Norway

Country: Norway

The aim of this study is to examine the various editions of the influential textbook *The Good Paper* by the Danish composition scholars Lotte Rienecker and Peter Stray Jørgensen. The book was published in Denmark for the first time in 1997 (*Den gode opgave*), in Sweden in 2002 (*Att skriva en bra uppsats*) and in Norway in 2006 (*Den gode oppgaven*). It was published in English in 2013 as *The Good Paper*. The book is among the best-selling and most borrowed from university libraries by students across academic disciplines in Scandinavia. Our main research questions are: How do the various editions of a popular book on essay-writing mirror changes in higher education in Scandinavia from the first edition in 1997 till today? Has the picture of the student's role as student and citizen changed?

The research design is based on publishing theory as an approach to research on contemporary history. The analysis of the texts is based on rhetoric and multimodal theory. More precisely, we examine the change of topoi in the various editions, using a rhetorical term from Aristotle, and we examine the interaction with the reader taking place in the different texts using concepts and analytical methods from multimodal theory. As a change in topoi we point out that the editions have changed the focus from the finishing thesis as the typical student text, to a broader set of student texts, mostly processual texts. The first edition was meant for writing in the humanities, but the newest editions are also for writing in the social sciences – and partly for science in general as well. The multimodal analysis points out a change in the way of addressing the typical student: the newest editions are far more schematic and filled with writing exercises. This indicates a student not just finishing his or her studies with a final thesis, but processing and advancing through continual text production. The analysis tells us that writing in higher education has become more standardized at the same time as different kinds of writing have become more important as learning activities.

B2: Educational resources in specific contexts

Youth and PNLD textbooks at a settlement school: questions about the specificity of countryside schools in Brazil

Chair: Eric Bruillard

Room: C.338

Time: 16:00-18:00

Edilane Vieira and Tânia Maria Figueiredo Braga Garcia

Escola de Ensino Médio Paulo Freire; Universidade Federal do Paraná - NPPD

Country: Brazil

The central theme of the research is the relationship between the specificities of schools located in rural areas, the ways of being a young student in these localities and the textbooks produced and distributed by the federal government to Brazilian public schools. The research is articulated to the discussions of the Centre for Research on Didactic Publications (NPPD), Federal University of Paraná, Brazil. The research problem stems from discussions in the country regarding the need to produce specific textbooks for schools located in rural areas, different in both content and form from the textbooks produced for urban schools, and the controversies generated by this proposition. The research lies theoretically within the scope of the production of social movements and academic production identified as Countryside Education (Caldart 2011), strengthened in the last decades in opposition to the concept of Rural Education, which has been identified by the neglect of public policies regarding the schooling in rural areas throughout the 20th century. The context of the research lies in the experience of countryside schools located in settlements of the Agrarian Reform of the Movement of Landless Rural Workers (MST). The main objective was to analyze the presence of textbooks in school life, seeking evidence of the existence of school specificities that justify the need or not of books especially produced for such students, who, in this particular condition, are Brazilian high school students living and studying in Agrarian Reform settlements. Sociologically, the perspective was to give space to the subjects' point of view (Bourdieu 2002), in this case the young students and teachers who produce school life in the locality. The empirical research was developed at the Paulo Freire High School, located in the municipality of Abelardo Luz, state of Santa Catarina (Brazil), which serves students from several settlements in that region. Methodologically, it is an ethnographic research (Garcia 2001) that used participant observation, documentary analysis, interviews and other instruments of data production as empirical work procedures. The analyses pointed different uses of the textbook in school situations, meanings attributed to this resource by teachers and students and also evidenced the subjects' point of view on the problem of specific books for students living in rural areas, supporting arguments contrary to this proposition. The students pointed out the importance that the textbooks discuss relevant issues to their lives, as well as issues and social problems that mark social life in the country and in the world. The teachers emphasized the function of the textbooks as a support in the construction of the classes, not assigning to them the leading role in teaching. In response to the main question that guided the research, the defense of books common to rural schools and to schools located in urban areas was made explicit.

B2: Educational resources in specific contexts

The vision of those responsible for developing learning materials in municipal educational contexts

Chair: Eric Bruillard

Room: C.338

Time: 16:00-18:00

Carmen Denébola Álvarez Seoane and Jesús Rodríguez Rodríguez

University of Santiago de Compostela

Country: Spain

The role of city councils in education and the presence of local culture in educational media have generated interest in the study of resources. This contribution helps to identify and describe the characteristics of the didactic materials in printed and digital format elaborated with the support of the local administration, the elaboration processes and the decisions of the municipal government.

The information presented comes from the doctoral thesis “Teaching materials in printed and digital format elaborated with the support of the local administration. Prospective and descriptive study in the province of A Coruña”, recently defended at the University of Santiago de Compostela (Spain). The development of this research has had a presence in previous IARTEM conferences: in 2012, in Brazil, we present the problem under study and the methodological design; in 2013, in Ostrava, the first results obtained in phase one were presented, a scanner on the location and description of the resources elaborated by the local administrations that proposes a cataloging of educational resources developed by municipalities in the province of A Coruña (Spain); and in 2015, in Berlin, we present a more complete version of that phase one and a first approximation to phase two, in which we designed a questionnaire for municipal managers of the development of educational resources, it was aimed to analyze policies, speeches, resources and other factors that have influenced local governments to elaborate or not elaborate teaching materials.

In this paper, with the study completed, we would like to present, firstly, a brief approach to the theoretical and methodological framework that has guided our steps, and secondly, the final results and conclusions of the research, with special emphasis on the second phase involving a questionnaire methodology with a sample of 84 councils, on the opinion and declared knowledge of the people responsible for the development of teaching materials in the municipality and that has allowed to know his vision regarding the processes and decisions made by technicians and governors (pedagogical foundations, professional profiles, competences, financing, among others). Helping to clarify municipal educational programs in relation to the production of learning materials to identify funding sources and to describe the overall process including design, development, publication and dissemination of educational resources produced by them.

B2: Educational resources in specific contexts

Analysis of the characteristics of the digital didactic materials used and developed by the teachers themselves: case study of two primary schools in Galicia

Chair: Eric Bruillard

Room: C.338

Time: 16:00-18:00

Jesús Rodríguez Rodríguez, Carmen Denébola Álvarez Seoane and Montserrat Castro Rodríguez
University of Santiago de Compostela
Country: Spain

This paper shows the main features and partial findings of a research project entitled Schools in the Digital Society: Analysis and proposals for the development and use of digital educational content - Escuel@ Digit@l (EDU2015-64593_R) which is part of the Spanish National Research, Development and Innovation (R+D+i) Programme Oriented Towards the Challenges of Society. In this research project participate many research teams and independent researchers from five Spanish universities: University of La Laguna, University of Las Palmas de Gran Canaria, University of Valencia, University of Santiago de Compostela and University of A Coruña. These teams have extensive experience in this line of research, as reflected by their participation in other R & D projects and their academic publications. The project is also supported by companies in the sector, as well as international associations and researchers.

This research project aims to analyze the current state of the production, distribution and educational use in the classroom of educational digital content or online instructional materials for primary education in a sample of three regions of Spain (Canary Islands, Galicia and Valencia). The purpose of the research project is to explore what digital didactic materials are offered to elementary schools in the Spanish context, which educational models underline them, what differences could exist between commercial and institutional platforms, what vision have the stakeholders about the educational digital resources, what impact have in the classroom, how they are used and, finally, what recommendations can be made to the agents involved in producing and using educational resources.

A first approach to the study, through its objectives, methodology and initial results, was presented by Professors Pablo Joel Santana and Jesús Rodríguez at the 14th IARTEM Conference held in Lisbon, as part of the round table "New media, new ways of learning?" which addressed the discussion on whether the coexistence of printed and digital media contribute to potential new teaching and learning methodologies or only increase the number of available resources without fundamental changes in educational practices.

This time we focused the communication on Study 3 of the main research project. This third phase of research has focused on carrying out case studies on the use of digital media in schools and primary education classrooms. A sample of 7 primary schools has been selected, which has been followed up during a school year. From these schools, information has been collected on digital resources and their use in classrooms by teachers and students, through non-participant observation in the classroom, interviews with key informants (school management, ICT, families, etc.) and review of the school's documentation about its annual programming and the integration of ICT, of the digital teaching materials used and other web resources. Specifically, we will focus on one of the dimensions analyzed in this Study 3, the one referring to the analysis of the characteristics of the digital didactic materials used or elaborated by the teachers themselves, and the results obtained in two of the seven case studies, selecting the schools located in Galicia.

As a summary of the findings, the digital materials elaborated by the teachers have led to improvements in specific aspects involving the integration of technology to facilitate the reading of documents and management of certain materials. However, deficiencies also found by previous research were highlighted insofar as attention to students with visual, sensory or motor difficulties, the lack of activity proposals to foster student interaction and the lack of diverse sources of information for classroom work. The digital nature of resources could facilitate these aspects.

B3: Curation and selection

Lecturers as curators of cross-media resources: a literature review

Chair: Thomas R.S. Albrechtsen

Room: C.201C

Time: 16:00-18:00

R.H. Leighton, D.M.E. Griffioen and R.J. Oostdam

Hogeschool van Amsterdam

Country: The Netherlands

In today's era of content abundance, a huge amount of resources is available digitally, from research articles to news items and from online courses to YouTube videos. As a result, lecturers in higher education have an endless supply of crossmedia materials that they can present to students as learning materials.

This presents lecturers with the challenge of selecting those materials in such a way that they match the course topic and prior knowledge and proficiency level of the students. Additionally, they need to consider how to structure resources and how to make connections between them in order to support students' learning (Kallenberg, et al., 2009). It is often recognized (e.g. Anderson, 2015; Siemens, 2008) that this task is remarkably similar to the task of curators in museums, who expertly make selections and organize and contextualize artefacts (Bhaskar, 2016). Considering those similarities, surprisingly little is known about how lecturers conduct this task.

This study investigates how lecturers in Dutch higher professional education select, structure and present crossmedia resources for educational purposes, from the perspective of curation. This paper aims to provide an overview of relevant research regarding "lecturers as curators" in the context of higher education. It will share the outcomes of a literature review, for which articles were identified in three databases (ERIC, Web of Science (WoS) and Catalogue Plus), using the search word "curation" combined with filters for the field of (higher) education. Only articles published in English in peer-reviewed journals, institutional research reports and conference proceedings prior to November 2018 were selected. This led to a selection of 64 articles that focused on curation within higher education. Of these, 17 focused on curation of learning materials done by lecturers.

Findings show that there is relatively little research into lecturers' curational processes. Although most articles identify the notion of curation as a useful approach in teaching, they fail to describe overarching processes or criteria for successful curation. Five of the reviewed studies describe curational practices by specific groups of lecturers, teaching a specific subject such as maths or music. Seven other studies focus on the outcome of lecturers' curation processes, describing the curated collections that are the result of it. Additionally, two articles present a conceptual model of educational curation; namely Wolff & Mulholland's (2013) Curational Inquiry Learning Cycle and Deschaine & Sharma's (2015) 5C Model. Both models approach the process of curation as a sequential multistep model, in which steps cannot be seen independently: meaning is added with every step of the process. Although they use different terminology, steps such as collecting, selecting, organising, and presenting resources are identified. However, both models have not been tested empirically. The authors acknowledge the importance of this, by stressing that more research into the topic is necessary. The proposed paper will present a complete overview of the findings, summarize the two models, and indicate how these models can be a starting point for further empirical research.

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B3: Curation and selection

Renewing teaching resources by nurturing human network: analysis of design teachers' network

Chair: Thomas R.S. Albrechtsen

Room: C.201C

Time: 16:00-18:00

Magali Roumy Akue and Éric Bruillard

Paris Descartes University

Country: France

This contribution, part of a PhD dissertation, studies how human-based environmental scanning (or strategic monitoring) may contribute to design teachers' acquisition process of teaching resources in higher education. Our hypothesis is based on the results of ReVEA (French National Research Agency project, 2017), which postulates that the network is an important part of resource management.

Environmental scanning (Morrison, 1992) is the activity of scanning the external environment in order to identify new trends, signals and change patterns so as to forecast the future. It is an important activity of design for teachers because they have to keep up to date with contemporary and societal changes and evolving professional practice (Julier, 2014). Teachers use environmental scanning to renew their resources in order to create new design projects, nourish contributions and feedback during practical lessons and seek out partners for workshops.

We work on a key part of teachers' scanning process that involves building and maintaining human networks and relationships. This activity can provide teachers with updated resources in different areas and expand their emergent information resources. We define a network as links between several individuals in various ranges of subjects. Our methodology includes the construction of a conceptual framework based on environmental scanning, built for understanding the role of human networks in the environment at different scales (macro, mezzo, micro).

First, we use the concept of personal and extended network to analyze the teachers' network characteristics such as its size, density and geographical composition (Dubini & Aldrich, 1991). Second, we study the field of expertise of individual profiles belonging to teachers' network to understand teachers' needs. Third, we study resources shared between individuals in the network to qualify the positive contribution of the network to updating and renewing teaching resources. Finally, we examine the behavioral rules in the network including the sharing process and cooperation rules.

We conducted a qualitative study and semi-structured interviews involving sample of 15 design teachers in France. These teachers come from different areas and design: product and graphical and social design. Teachers shared and explained their teaching context, their motivations for resource acquisition and the organizational modes in their networks. For coding, we used an inductive-hypothetic-deductive loop with a round trip between the data and the conceptual model. Our results show that design teachers mobilize short-, medium- and long-term networks. Their personal network eventually becomes their colleagues. Furthermore, students, even after graduation, remain part of teachers' personal network. Networks expand gradually within teams through a process of sharing. Teachers acquire emergent information from various professional areas. For example, teachers cooperate with engineers, researchers and designers who bring grey and fresh information.

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B4: Use of textbooks / games and specific contexts

Using textbooks and learning resources to scaffold students' learning

Chair: Thomas Illum Hansen

Room: C.332

Time: 16:00-18:00

Zuzana Sikorova, Iva Cervenkova, Marek Vaclavik, Peter Bagoly-Simó and Bruce Knight

University of Ostrava

Country: Czech Republic, Germany and Austria

The paper reports on an empirical research focused on the problem of what role teaching and learning resources play in scaffolding students' learning, i.e. what support they provide and how teachers mediate it. The following research questions were formulated:

RQ1: How do teachers apply and understand the use of textbooks and other teaching and learning resources for student learning?

RQ2: What strategies supporting learning can be identified in teaching and learning resources?

RQ3: How do teachers use teaching and learning resources to support learning?

The theoretical background represents a socio-cultural perspective on learning which enables us to view how both the cognitive and social aspects influence students' learning. An essential feature of students learning is the zone of proximal development (Vygotsky, 1978), where learning involves internal developmental processing as students interact with people and learning resources in their environment. We understand instructional scaffolding as strategies that teachers use to help learners bridge a cognitive gap or progress in their learning to a level they were previously unable to accomplish. A framework has been developed for analysing scaffolding strategies, based on the combination of scaffolding means, intentions and types of scaffolding (van de Pol, Volman & Beishuizen 2010; Yelland & Masters, 2007; Sikorova & Cervenkova, 2016).

The research used both qualitative and quantitative methods to explore and analyze data, with in-depth interviews with teachers and textbook content analyses. Based on the results of the qualitative stage, a questionnaire was developed as a tool for investigating teachers' use of resources and application of scaffolding strategies. The questionnaire will be introduced to the conference participants to invite them to join the research and carry it out in their own countries. In the first phase, content analyses have been conducted to identify scaffolding strategies in Czech printed and digital secondary school textbooks for various subjects (RQ2). The analyses used the developed framework, identifying scaffolding types, intentions and means. Then, two kinds of in-depth interviews with 15 Czech secondary school teachers were applied. The first was focused on the use of the resources (RQ1) and the second aimed at scaffolding strategies that teachers apply in resource-based teaching (RQ3). The teachers were addressed according to the method of maximum variation sampling; the main methodological tool used for analysing the data was typological analysis.

The results showed that potential scaffolding elements built into the textbooks were not frequent, whether in printed or, surprisingly, in digital textbooks, though they could be tracked in textbooks based on constructivist foundations. The findings suggest that the form of the text may be less important than the concept of the book. It was also apparent that textbooks of different subjects may manifest different scaffolding strategies. The analysis of data on the use of resources concluded that there were two distinct types of teachers, who differ in the kind of the key printed resource used and the purposes of its use. The analysis of data on teachers' scaffolding strategies suggested that teachers mainly used such scaffolding means as hints, questions and modelling, while they rather neglected feedback on students' learning and metacognitive strategies.

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B4: Use of textbooks / games and specific contexts

Gamification has a weak or no effect on pupils' learning, but ...

Chair: Thomas Illum Hansen

Room: C.332

Time: 16:00-18:00

Louis Kørhøsen, Stig Toke Gissel and Alysson Ramos Artuso

UCL University College

Country: Denmark and Brazil

The research presented is an analysis of data that is extrapolated from a critical review mapping the effect and/or influence of ICT on pupils learning in first language (L1), second language (L2), mathematics and science in k-9 education (see presentation: Does the use of ICT in education promote student learning?).

One of the early findings when coding the 450 articles of the review was the large amount of articles where gamification was part of the ICT learning materials and/or didactical design. This analysis is therefore not an analysis of the effect of gamification in general, but an analysis of gamification within these criteria.

Gamification has since it became a popular phenomenon in ICT and learning ca 2010, been assumed to hold big promises in motivating and supporting children's learning (Shaffer, 2010; Hamari et al, 2014). Gamification is however a broad term that includes many kinds of implementations. In the coding of the original review, gamification is defined as: learning materials and/or didactical design where game elements are present and where there is a didactical purpose in the design. The research question of the extrapolation is:

How are game elements used and researched as part of teaching with ICT in core subjects? Is there a pattern to how game elements is being introduced and how does it affect the learning outcome?

The extrapolated data was analyzed in terms of research method, subject, grade, and how it was implemented in terms of didactic scaffolding, and length of intervention period.

Preliminary analysis show, that gamification is mainly found in skill and drill exercise materials for mathematics teaching for primary grades measuring low or no effect on learning but showing outcomes on student motivation. However, I have found some interesting studies showing other types of outcomes of gamification, for example long term use of gamification and using gamification embedded in a didactic design.

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B4: Use of textbooks / games and specific contexts

Scaffolding for inclusion in project-based learning with learning tech

Chair: Thomas Illum Hansen

Room: C.332

Time: 16:00-18:00

Stinus Storm Mikkelsen

UCL University College

Country: Denmark

The study is part of a larger intervention study on seven private schools experimenting with the use of digital learning tech in project-based learning in a variety of disciplines in 4th through 6th grade. Drawing on empirical data from the larger study, this present study focuses on the inclusion of low achieving students.

Research question: How can technical and social scaffolding strategies enhance low achieving students' participation in project-based learning?

When it comes to inclusion, project based learning is paradoxical. Some of its strengths and inclusive potentials – student engagement, flexibility, collaboration, authenticity – can also make participation more difficult and have excluding effects. Judging from the existing body of quality research, project-based learning can be inclusive for low achieving students – but the research is still insufficient, and specific designs and strategies that may be effective in this regard has yet to be determined (Condliffe m.fl. 2017, 42–47).

Drawing on research and theory on inclusion (Hansen m.fl. 2018; Schmidt 2015) and on scaffolding in project-based learning more generally (Hmelo-Silver, Duncan, og Chinn 2007; Pea 2004; Van de Pol, Volman, og Beishuizen 2010), this study investigates the relation between teachers' scaffolding strategies and low achieving students' participation in project-based learning supported by learning tech. Data for the study is comprised of video observations in seven classrooms and interviews with teachers and low achieving students from each class. Both technical and social scaffolding strategies are analyzed in terms of intentions, strategy type, contingency and adaptation. Student participation is analyzed in terms of activity, contribution, role, and meaning. Three cases are analyzed in further depth and some basic patterns and relations between scaffolding and student participation are identified.

The study concludes that comprehensive, multiple and complementary scaffolding strategies can facilitate low achieving students' participation in project-based learning. The study provides in-depth analysis of such technological and social strategies. The study suggests that the currently dominating model of project-based learning in Denmark needs a much stronger focus on scaffolding.

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B4: Use of textbooks / games and specific contexts**Does visual design matter for learning with textbooks? How and which visual design parameters may affect learning with educational media****Chair:** Thomas Illum Hansen**Room:** C.332**Time:** 16:00-18:00**Yvonne Behnke****Humboldt Universität zu Berlin****Country:** Germany

The visual design of textbooks—including how clearly, aesthetically and coherently they are designed—may be a crucial factor in their educational effectiveness. Research and theoretical approaches for mastering effective textbook design can be found in visual communication, information design and educational psychology.

Recent studies investigated cognitive and affective aspects of multimedia learning with the aim of integrating emotion, motivation and attitude into cognitive processing models. The theoretical background builds on Moreno's (2005) Cognitive-Affective Theory of Learning with Media (CATLM). The Emotional Design Hypothesis assumes that visually appealing learning materials support cognitive processing (Mayer & Estrella, 2014). In contrast, numerous studies have revealed that students have some difficulty in interlinking complex image-text relations and processing information from visuals in textbooks (e.g. Schnotz et al., 2014).

This paper investigates whether and how several design components of current geography textbooks may influence students' visual attention processes and learning motivation, examining the following questions:

- How do different textbook designs affect students' visual attention to textbook design elements such as images, graphics and text?
- How do learners assess different textbook designs and textbook design parameters relating to usefulness for their own learning process?

To analyse how students receive and evaluate the design and design elements of geography textbooks, this study utilised interdisciplinary observation methods, including eye-tracking and a questionnaire, to connect the disciplines of geography education and visual communication with text-image research and textbook analysis.

Eye tracking as a non-reactive, visual media reception analysis method was utilised to examine the degree and order of visual attention that students devote to different textbook designs and various design parameters such as images, graphics and text.

Building on the results of an exploratory study, an optimized research design was developed. Learners (secondary school, aged 15–17, in three different German federal states, approx. 100 participants) will observe three different textbook spreads (different topics and designs) randomized by being either originally taken from current textbooks' text or improved.

The three textbook spreads are selected on grounds of the following criteria:

1. Formal: in use (2017-2018) and most used;
2. Content: three different topics:
 - a) All topics are covered in the German geography curricula for secondary schools;
 - b) All topics had already been taught in the geography lessons of the participants;
 - c) Empirical findings on students' interests in topics taught in geography lessons;
 - d) The exercises in the exercise section involve depicted visuals.
3. Visual design elements: all spreads include text, graphics, maps and photos.

The questionnaire analyses how participants assess the textbook designs and visual design elements, as well as the usefulness of these variables in their learning process.

The exploratory investigation revealed a disparity between the number of textbook visuals and participants' visual attention to graphics and photographs within the textbook spreads. Graphics were often examined superficially, and exceedingly little attention was paid to photographs. A marked focus on text elements was observed.

The eye-tracking data will be analysed alongside the questionnaire results and the textbook analysis. The data will be contextualised with insights from educational psychology, visual communication and textbook analysis. By triangulating eye-tracking data, questionnaire evaluation and textbook analysis, this research elaborates on both the benefits and challenges of visual design parameters in educational media.

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B5: Sciences - didactical usage of textbooks and learning resources

What adaptations of resources for students with learning difficulties? Case-studies in the French vocational Baccalaureate for automobile maintenance

Chair: Morten Rask Petersen

Room: C.312

Time: 16:00-18:00

Solène Zablouk

Université Paris Descartes

Country: France

In vocational schools, teachers' work is defined by an official document called "référentiel", designed by a joint committee made up of professional companies, special training organisations and the ministry of education, represented by inspectors (Maillard, 2003). The content to be taught focuses on professional practices and the transmission of related knowledge.

In France, vocational schools are also known as places in which many students enroll because they are in a situation of school failure. This situation has been analyzed related to the concept of students' "rapport au savoir" (relationship to knowledge), it means differences between what students can say about knowledge taught in class and the school form of knowledge (Charlot, 1997). In the case of vocational students, Charlot (1999) showed that their discourses refer to a "rapport au savoir" away from school culture, because they are mostly centered on relational and emotional knowledge and not really on contents taught. This is why, according to him, teachers are more recognized by students for their ability to motivate them than for what they teach.

Following Charlot's work, Jellab analyzed teachers' work in vocational schools according to their perception of students' "rapport au savoir". He showed that as teachers think that many students have learning difficulties, they often adapt official contents by focusing on practical activities (Jellab, 2005a). They also pass on relational and emotional knowledge rather than general knowledge (Jellab, 2005b). As part of our PhD thesis, we were interested in one aspect of the teachers' work, namely the composition of "photocopies" as particular learning resources. As few textbooks have been edited, teachers often create their own documents in order to propose contents and exercises in class. Taking into account researches cited above, we wanted to observe the adaptations of resources the teachers do when they create these photocopies. How do they organize the contents? What selection of resources do they operate? We conducted our research by considering the case of the French vocational Baccalaureate in automobile maintenance. The objectives of this course are to understand how vehicles work and to learn methods for diagnosing and repairing faults. We focused on two vocational high-schools and two centers of apprenticeship.

In this presentation, we discuss three case-studies of vocational teachers (two in vocational high-schools and one in a center of apprenticeship). These cases were selected because they embody teachers' constraints between following "référentiel" precautions and adaptations to students' competencies. Our results show that teaching seems to be reduced to the transmission of professional practices without the conceptualization of knowledge. In fact, the first objective is to prepare students to be "efficient" during the class period. As a consequence, photocopies distributed in class and during practical activities often only include description of different vehicles systems without really explaining how they work. These photocopies are often composed of images and schemas, with little text.

Nevertheless, the consideration of students' reading difficulties is less important when teachers propose instructions designed by companies during practical activities. In fact, they do not adapt the latter, as students' habits are considered a main objective for being "effective" at work.

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B5: Sciences - didactical usage of textbooks and learning resources**Paths of appropriation of a new digital resource in the service of learning science and literacy: the case of the CNEC****Chair:** Morten Rask Petersen**Room:** C.312**Time:** 16:00-18:00**Emmanuelle Voulgre and Georges-Louis Baron****Université de Paris, EDA****Country:** France

In the project "Les Savanturiers du Numérique" (LSN) funded by the second French Program of Future Investments (PIA-2), "Training, Research and Animation Digital Spaces" (e-FRAN), the EDA laboratory of the Paris Descartes University (now University of Paris) has been in charge of leading investigations about the development of a software resource ("Cahier numérique de l'élève chercheur", CNEC - digital notebook of student- researchers) (Cisel and all, 2017).

The CNEC is a LMS-like environment aiming at helping children understand the different stages of a research process, at both primary and secondary level. Accessible with a computer and on digital tablets having an online connection, it has been designed with different modules that can be used to support students constructive thinking.

Our main research question here is to identify how teachers use during classroom sessions the different types of resources at their disposal.

Our theoretical context is mainly the approach developed by Baron and Bruillard about the analysis of the educational use of software and the work done in a previous projects: ReVEA1 (Voulgre, 2018, Voulgre, Roux-Goupille, and Gueudet, 2018, Baron, Beaume, Bento, Haspekian, Riquois, Voulgre and Zablot, 2018) and GTNum62 (Levoine and Loffreda, 2018).

In this contribution, we focus on the case of a class (year 8, UK) in Paris supervised by two teachers that we followed during 6 weeks.

We carried out a thematic analysis of exploratory data obtained during the working sessions or from research on Internet. These data are composed of notes of observations, audio and video captures as well as interviews with teachers and students.

Several kinds of resources are used by teachers. First, in common classrooms, are the "usual environmental resources" such as exercise books, pens. The "pivotal resource", central to the activity of teachers and students, is the CNEC. Third, there are some "retro actioned resources" for reactivating knowledge, built in a previous pedagogical sequence and mobilized in a new one (for example results about the reasons for the de-regulation of the climate). Last but not least, "palliative resources" are sometimes necessary for teachers to bypass obstacles such as a loss of the WiFi connection. We can also identify several functions to the CNEC: it is sometimes used as a medium for writing questions, a common space to visualize and to know all the questions, and a support to discuss the relevance of the questions. Some difficulties of using the CNEC depend upon the students' progress in their understanding of the current scientific project and upon the fact that teachers have to limit the risks of losing the face when using instruments with their students.

Other difficulties are due to the current prototypical status of the CNEC, ergonomic problems have been found, in particular the identification of the functional zones of the interface. Finally, once again, we have a confirmation of the fact that the use of digital resources in the classroom is a systemic phenomenon.

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B5: Sciences - didactical usage of textbooks and learning resources

Teachers' manuals: teaching physics knowledge in the early years of Elementary School

Chair: Morten Rask Petersen

Room: C.312

Time: 16:00-18:00

Fernanda Esthenes do Nascimento, Tânia Maria Figueiredo Braga Garcia and Larissa Carvalho Chaves

Universidade Federal do Paraná - NPPD

Country: Brazil

The theme of this research are the didactic manuals made to guide teachers on teaching (Bufrem Schmidt & Garcia 2006). In the international and Brazilian review studies, the thematic is pointed as a gap in the field of studies of textbooks. In this case, the research focuses on General Didactics manuals and Didactics and Methodology of Sciences and Physics Teaching manuals produced in Brazil, which present guidelines for teachers of early grades of basic education to teach knowledges in Physics. At this schooling phase, Physics is not a specific subject, therefore, the knowledge is part of a subject denominated Natural Sciences. Conceptually, the didactic manuals are understood as elements of the “disciplinary code” (Cuesta Fernández 1998) and for that reason they can be taken as evidences regarding the ways of teaching and learning disseminated in the Brazilian school culture, in different historic periods in different school subjects, and as traditions expressed in documents and norms, in textbooks and other didactic material and in school practices. This research is part of a larger project on teachers' manuals. The specific matter, in this case, is to understand the didactic and methodologic guidelines presented in the manuals intended for teacher education, at early and continued phases, contributing for the comprehension of how the Physics Didactics has been developed over the last century. Methodologically, the research comprised three stages. The first was to identify and select the work of General and Natural Science Didactics which circulates in the country, constituting a Physics Collection at the Centre for Research on Didactic Publications (NPPD/UFPR). The second stage comprised the previous reading of all works and the definition of a temporary clipping used to carry out the study, establishing the documentary corpus to be analyzed. Manuals released from the 1990s on were opted, since the Federal Government had promoted education reforms at that time, which established the National Curricular Parameters (PCNs) to guide the whole school system in the elaboration of their projects and teaching programs, constituting a mandatory reference also to the publication of school books. The third stage was the analysis of the content of five works, released between 1998 and 2013, verifying which ones met the initial criterion (orienting the teaching for the initial grades) and organizing the results under didactic categories, previously defined for the documentary analysis: contents proposed, objectives and suggested procedures. Among others results, the analyses evidenced: a) transformations in the guidelines compared to manuals published prior to that period, highlighting the gradual specification of themes specific to Physics; b) the same ways to comprehend teaching, its goals, methods, resources based on the value of students' activities, although sustained in different conceptions that varied throughout the 20th century. From these results, a new research has been proposed with the objective of comprehending the circulation of these works in the initial teacher formation courses, which will have its partial results included in the final text.

B5: Sciences - didactical usage of textbooks and learning resources -

The perspective of Natural Science teachers on the meaning and use of didactic materials during the final grades of Elementary School

Chair: Morten Rask Petersen

Room: C.312

Time: 16:00-18:00

Regiane Aparecida Kusman and Tânia Maria Figueiredo Braga Garcia

Universidade Federal do Paraná

Country: Brazil

This work presents partial results of the investigation whose main objective is to investigate the meanings and uses of didactic materials in the teaching of Natural Sciences. Didactic materials can be moderators between the students and the scientific knowledge; they can contribute to the learning, allowing a better understanding of the contents worked; and can represent support for the teacher's work (Delizoicov, Angotti & Pernambuco, 2009; Bueno & Franzolin 2017). Didactic materials contribute to establish some of the conditions in which teaching and learning occur and fulfill specific functions depending on how they are used. In Brazil, specifically in the case of Natural Sciences, different resources and didactic materials are suggested in the national curricular guidelines and also in the guidelines elaborated by the authors of textbooks included in the National Textbook Program (PNLD). However, despite the importance attributed to teaching materials, there are gaps in researches regarding teachers' and students' opinions about the resources used and their meaning in the teaching and learning of Natural Sciences. In particular, for schools located in rural areas, it can be assumed that there would be different types of resources available in the region for the development of many contents of this subject. The didactic material is the research theme, pointing out that it would be desirable to know the opinion of students and teachers on the matter. This exploratory study was carried out with three teachers who teach the final grades of Elementary School, in schools located in the Metropolitan Region of Curitiba, with the intent to evaluate the adequacy and effectiveness of the instrument for the main study. The data were produced through a questionnaire with open-ended and closed-ended questions to identify resources and didactic materials used by teachers and their meaning in the teaching and learning of Natural Sciences. The analysis of the answers pointed out that a part of the questions is appropriate to the aims of the research, but some of them need to be reformulated or adjusted because they didn't contribute to collect the expected information. Therefore, the results of the exploratory study showed that: a) the instrument was insufficient to identify the resources available at schools and used by teachers in their practices; b) the formulation of some questions wasn't suitable to allow the identification of resources available out of the school, such as the natural and environmental resources, one of the research aims. c) regarding the meaning of didactic materials in teaching, the answers presented generic notions, describing the materials as a support used in the teaching and learning processes; therefore, it is necessary to change the questions, aimed to obtain information in deep on the role of materials in the didactic action. Finally, the exploratory study highlighted that the teachers mentioned textbooks as the main resource used with other materials in a complementary way, suggesting the necessity to include specific questions about this resource in the instrument. Overall, the study evidenced that it is necessary to structure new research instruments and to broaden the research strategies with observation and interviews.

B6: Textbook selection and evaluation

The limit of pages of Brazilian secondary school textbooks: the consequences of a tortuous bureaucratic system on learning materials

Chair: Anders Stig Christensen

Room: C.317

Time: 16:00-18:00

Alysson Ramos Artuso

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Country: Brazil

The Brazilian textbook program (PNLD) is one of the biggest governmental purchases of textbooks around the world. The public investments in this kind of teaching material reach US\$500 million annually (Brasil, 2019). Such amount attract regulatory sectors of the Brazilian state structure, like the Federal Court of Accounts (TCU), and brings political power to the Ministry of Education (MOE) that is permanently disputed by different political actors. The Ministry of Education is responsible for defining the requirements of the PNLD open call for textbooks. Based on these criteria, a specialized board approves or rejects the textbooks. Only the approved textbooks are available to be selected by teachers and bought by the government. In this scenario, the PNLD criteria, the evaluation process of the textbooks, the teachers' selections and textbook use in schools are part of a growing research field in Brazil (Munakata, 2012). One specific research problem is to identify and discuss the origin, adequacy and changes of the PNLD open call requirements. In 2015, PNLD brought a new criterion to select textbooks: a maximum number of pages for secondary school textbooks. This motivated the research question: what reasons lie behind this requirement? To answer this, the author researched the PNLD documents and the proceedings of the public meetings, especially between 2012 and 2015, as well as the TCU recommendations to the MOE. The analysis shows an intricate bureaucratic system that, has good intent but makes bad choices, delivering results undesired by anyone. Apparently, the page restriction emerged not for pedagogical reasons but economic ones, since one factor used by government to stipulate the price paid for textbooks is the number of pages. However, successive changes in the MOE and a lack of technical studies made the decisions follow a tortuous way and, instead of to change the price formation criteria, they changed the PNLD requirements. With that, some subjects have underestimated the number of pages and others overestimated. The is particularly problematic for math, history, chemistry, physics and biology. In biology, for example, all textbooks approved in the last PNLD would be rejected in the PNLD 2015 because of the page limit. On the other hand, geography, philosophy, sociology, Spanish and English textbooks became much bigger, with the aggravating factor that Spanish and English textbooks were already the most expensive for the government, even before the increase in the number of pages. In the end, the problems with page extents did not bring the financial savings desired by governmental regulatory sectors. Besides, with the limitation and the lack of time to adjust the textbooks, the content of some subjects was pedagogically compromised as was their potential use for didactic activities.

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B6: Textbook selection and evaluation

Pre-school and primary school teachers' assessment of the importance of quality criteria of learning materials

Chair: Anders Stig Christensen

Room: C.317

Time: 16:00-18:00

Krista Uibu, Jaan Mikk, Triinu Kärbla, Merle Taimalu and Heily Leola

University of Tartu

Country: Estonia

Every year, many new learning materials are published in Estonia. However, the evaluation of learning materials is very modest at national level. Although Estonian teachers have autonomy in choosing learning materials, there are no evidence-based criteria for evaluating their quality. As a result, school leaders or teachers may choose learning materials intuitively. The aim of this study is to find out the importance of various quality criteria of learning materials for pre-school and primary school teachers. The sample of the study involved 64 pre-school teachers and 46 primary school teachers from the innovation and practice schools of Estonian universities. Teachers evaluated the criteria and addressed different aspects related to good learning. An original questionnaire (30 items) was prepared, based on relevant earlier studies (van den Ham & Heinze, 2018) and the criteria for the evaluating learning materials as developed by the international jury to evaluate materials for the Best European Learning Materials Awards (BELMA, 2019).

There were two separate datasets, for pre-school and primary school teachers. Preliminary analysis included calculation of the averages of teachers' assessments for every criterion. It was indicated that primary school teachers evaluated as the most important: "understandably framed learning instructions and work orders", "the structure of the learning material is clear and understandable", "learning material includes practical exercises and tasks". The least important criteria were: "the structure is introduced in the beginning of the learning material", "a good learning material includes facts, definitions and rules". Pre-school teachers expressed high ratings in most of the criteria (e.g. "sentences are understandable", "the learning material allows to associate knowledge from various areas with everyday life"). However, they assessed the criteria of "a good learning material includes new words and terminology" and "the explanations of abstract words and ideas" as the least important. The sequence of the criteria was calculated almost the same for pre-school and primary school teachers (correlation between the assessments was 0.97). The high uniformity of the importance of the criteria in our findings differs from the traditions of BELMA assessments in which larger differences in evaluation are accepted. Future analysis anticipates calculating the statistical significance of differences between assessments on various criteria as well as between pre-school and primary school teachers. The analysis of the data by groups of similar criteria is also of interest.

Implementing the quality criteria of learning materials is important for teachers to make their choice based on the principle that learning materials support students' comprehensive development.

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B6: Textbook selection and evaluation

Pre-school and primary school teachers' evaluations of selection opportunities for learning materials and of selection principles

Chair: Anders Stig Christensen

Room: C.317

Time: 16:00-18:00

Merle Taimalu, Heily Leola, Krista Uibu, Trinu Kärbla and Jaan Mikk

University of Tartu

Country: Estonia

Teachers in Estonia have great autonomy to make decisions in the teaching process. One very important decision is the choice of learning materials, which directs the planning of teaching/learning. Estonian pre-school institutions have been characterized by the trend of schoolification (Neudorf et al., 2017), so it is important to analyse how different pre-school and primary school teachers behave in their decisions in choosing learning materials. There is no evidence on what basis learning materials are chosen. The aim of this study is to give an overview of the estimates on opportunities and principles for choosing learning materials among pre-school and primary school teachers. The research questions are as follows: To what extent can teachers decide on the choice of learning materials? What are the principles for choosing learning materials in pre-school and primary school mentioned by teachers?

The sample consisted of 110 teachers from seven Estonian counties (64 pre-school and 46 primary school teachers), with ages ranging between 23 and 70 and experience of teaching from 1 to 50 years. The data was collected by questionnaire, which is considered as the most suitable method for gathering a large amount of data and creating a generalized profile of respondents. The questionnaire contained both closed and open-ended questions. In this study, two questions were analysed: a 3-point scale question (How far can teachers decide on the choice of learning materials?) and an open-ended question (What are the main principles on which teachers choose the learning materials?) Descriptive statistics and quantitative content analysis were implemented in data analysis. Codes were formed on the basis of principles mentioned by the participants. The codes were assembled into categories, the frequency of which was presented quantitatively.

Preliminary results showed that pre-school teachers were much more independent in their choice of learning materials than primary school teachers. Respectively, 92% of pre-school teachers and 7% of primary school teachers said they can decide on the choice of learning materials. The majority of primary school teachers mentioned they can only slightly influence the choice of learning materials in their schools. While 15% of primary school teachers declared they cannot participate in the decision-making process about learning materials, there were no such answers among pre-school teachers. More often, compliance with the curriculum, affordability, age-appropriateness, child-friendliness, but also visual design and diverse tasks were referred as principles for the choice of learning materials. Several teachers also referred to external factors such as price or colleagues' recommendations. The results will be an important input for developing teacher education courses on the topic of learning materials, and to develop quality criteria for choosing learning materials.

Parallel Session C

12 September 2019, 10:15-12:15

C1: Spanish/Portuguese

Curricular materials for violin beginners: their analysis as a basis to generating a new approach

Chair: Jesús Rodríguez Rodríguez

Room: C.201A

Time: 10:15-12:15

Lucía Echeverría de Miguel

University of Valencia

Country: Spain

The instrumental teaching-learning process is frequently mediated by the use of curricular materials, which modulate the pedagogical-didactic action of the teacher and the role of the student in such activity.

In this context, we direct our attention to the educational framework that takes place in music conservatories of the Valencian Community (Spain), focusing on the speciality of violin. In such a scenario, our question is whether the curricular materials used by the teachers for the first violin course of the elementary grade respond to the psycho-educational needs of students. This is a topic in the curricular regulation of artistic education (Decreto 159/2007, de 21 de septiembre, del Consell).

The qualitative methodological paradigm uses diverse sources of information to understand the object of study, such as words, documents, speeches or images (Rodríguez, Gil & García, 1999), perspectives that seem appropriate for this study. To set up the study sample, we approached 14 music conservatories in the Valencian Community, which are in the public sector and whose didactic programs included the speciality of violin. We had responses from seven centres, where we reviewed the curricular materials that teachers use for the first violin course of the elementary grade.

Finally, we selected the five materials that were mainly used, which we analysed using the technique of content analysis. For this purpose, we developed a model of analysis sheet based on the approach of Martínez (1992), in which we studied five topics: the pedagogical model suggested, the content, the didactic strategies that are modelled, the input of material for the teacher, and the learning model of the student. Each one, in turn, contains a set of thematic descriptors relevant to the interests of our study.

The results reveal that the five materials selected, although they satisfy some of the descriptors that configure the topics of analysis, present a series of significant insufficiencies in terms of their lack of adequacy to the characteristics and psycho-educational needs of students of the first violin course. Therefore, they are not suited to the demands that are set out in this regard in the prescribed curriculum. In this sense, we consider that it is important that the materials in the violin teaching-learning process should incorporate contributions from the sciences of psychology and pedagogy, as they have done in other areas of education. This could help in a substantial way both for the pedagogical-didactic actions of the teacher and for the pupil, allowing him/her to play a more active and autonomous role in the learning process.

This research concludes with the proposal of a new didactic material that tries to solve the set of needs identified in the curricular materials analysed. At the same time, it has the objective of promoting an adequate teaching-learning process of the violin, both for students and for teachers.

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C1: Spanish/Portuguese

Is technology really used in digital textbooks for the acquisition of competences? Digital Philology as an opportunity for its update

Chair: Jesús Rodríguez Rodríguez

Room: C.201A

Time: 10:15-12:15

Carles Lindín

Universitat de Barcelona

Country: Spain

In order to learn how technology is used to acquire curricular competences, 12 digital textbooks (4 secondary courses by 3 publishers) of Catalan language and literature were analyzed to determine the use of technology to acquire linguistic, literary and digital competences, as well as digital philological. We work on 4,807 uses of technology.

The secondary curriculum for the subjects of language and literature establishes the obligatory nature of the incorporation of digital competences. Digital philology deals with analyzing and studying linguistic and literary facts with digital tools as well as new linguistic and literary realities that have emerged in the digital age. It is an opportunity to adapt curricula to digital reality. We chose digital textbooks (a) because they are the real curricula in the classroom (García, 1999), and (b) because working with digital material helps to incorporate technology into the teaching / learning process compared to the teaching logic around the textbook. It is therefore necessary to analyse the use of technology in digital textbooks to assess to what extent they are used to prepare students in linguistic, literary and digital competences.

The choice of content analysis is based on an appropriate methodology for research: it is common (especially in the subject of languages) and allows analysis of the content, delimitation of its dimensions and creation of a categorical system to include the various parts of the message in the corresponding category (Boronat, 2005). It allows us to verify to what extent the content of the communication fulfils the objectives (Berelson, 1952). The methodology of content analysis followed usual sources (Bardin, 1986; Berelson, 1952; Krippendorff, 1990). To give more solidity to the choice, the theory of manifest and latent meanings is related to communicative theory (Jakobson) and locutionary, illocutionary and perlocutionary speech acts (Austin). The latent meaning is assimilable to the illocutionary meaning (the intention, the meaning according to the context). The data analysis will be carried out by means of descriptive statistical analysis: frequency distribution; measures of central tendency: mean, mode and media; and measures of dispersion: deviation and variance.

As a general conclusion, the uses of technology are of low intensity. Some competences work a lot while others never do: they concentrate on activities (very often self-corrective), internal content, work individually, the student assumes the role of consumer, appear in main spaces, especially if they are interactive, are not used socially and are incorporated within the digital textbooks.

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C1: Spanish/Portuguese

Processes of production, selection and use of teaching resources in literacy classes in rural areas

Chair: Jesús Rodríguez Rodríguez

Room: C.201A

Time: 10:15-12:15

Roseli Borowicc and Tânia Maria Figueiredo Braga Garcia

Universidade Federal do Paraná - NPPD

Country: Brazil

This work presents partial results of a research whose objective is to know the processes of production, selection and use of didactic resources in literacy classes of schools located in rural areas, in Agrarian Reform settlements in southern Brazil. The work is based on previous research results on the processes of selection and use of textbooks by teachers (Borowicc 2016), in which it has been evidenced that: a) from the point of view of the process of choosing textbooks, schools' and teachers' autonomy have been reduced; b) according to the teachers, the works of the National Textbook Program (PNLD) - Countryside sent to the schools presented problems at the production level, not corresponding to some requirements described in the public notice; c) the works were criticized for the simplification and reduction of contents, which affected the use of books in class; d) factors such as the various educational proposals that circulate simultaneously in the same school influence the choice and use of textbooks - in the case studied, the guidelines of the MST Education Sector, the curricular proposal of the Municipal Education Network and the guidelines of the Literacy in the Right Age Program. Based on these findings, the problem to be investigated regarding the production and use of other materials in the schools under study was structured in order to identify the types of didactic resources used, to know the processes of local production of materials, the ways they are selected and produced, the sources of consultation used and the pedagogical conceptions that guide the teachers' choices, seeking to record their opinion regarding the materials and the processes of production and use; also including textbooks as materials, since the government invests a large amount of resources in textbook distribution to Brazilian public schools. Understanding school in the perspective of social construction, the research uses an ethnographic approach (Rockwell 2009; Garcia 2001) and produces data through fieldwork strategies such as participant observation, questionnaires, interviews, documentary analysis, among others. As a result of the exploratory stage of the research, we present the data resulting from a survey carried out to identify didactic resources used to teach reading and writing through the application of the instrument to seven teachers of literacy classes of two rural schools participating in the research. Among them, books of children literature, activities taken from the internet, activities extracted from other books, purchased educational games, and different posters produced by the school stand out. Materials such as magazines, educational games and toys produced at school, videos, films and documentaries, maps and globes, and pedagogical games available on the Internet were rarely cited. It can also be noted that purchased toys and sports materials are frequently used with students in early Childhood Education and Physical Education classes, but rarely by literacy teachers. It is worth noting in the analyses and observation made at the exploratory stage that resources available in the communities were briefly mentioned, despite the indications in the norms and proposals of making use of local resources. The next stage of the project (2019-2020) will include observing classes from one teacher, twice a week, to analyze the use of instructional materials.

C2: Literature

Why study literature? Legitimations in five literature textbooks

Chair: Guilherme Romanelli

Room: C.201C

Time: 10:15-12:15

Christoffer Dahl

Kristianstad University

Country: Sweden

Research shows that interest in and reading of fiction has declined among young men in recent years in Sweden. Students also have difficulties understanding the dominant position of literature in school. Since literature has a key role in the curriculum, an important question is how today's literature textbooks legitimize the study of literature. The purpose of this paper is to discuss the dominant legitimations of literature study in five literature textbooks for the upper secondary school in Sweden and how these legitimations are realized textually and visually. The presentation is based on my thesis (Dahl, 2015).

The theoretical framework is based upon social semiotics, multimodal discourse analysis (Kress & van Leeuwen 2006; Björkqvall 2008) and the concept of legitimation (van Leeuwen 2007; Persson 2007) and voice (Fairclough 1992, 1995; Ledin 1999). The following questions are used to analyze legitimations in the material: 1) Are the legitimations strong or weak? Is there any strong, in the sense of profound all-embracing legitimation for literary study? 2) Are the legitimations explicit or implicit? 3) Are the legitimations positive or negative? Do the textbooks formulate positive or negative arguments in connection with the study of literary? 4) Is the study of literature oriented to the text itself or is it considered as a means to gain non-literary knowledge? 5) Are the legitimations formulated in individual or social terms? 6) What different types of substantial legitimations can be distinguished in textbooks (for example, aesthetic, ethical, existential, political)?

The result indicates several similar legitimations: the study of literature is associated with personal growth, pleasure and how history affects the present. It also shows how visual resources as well as specific voices are used to underpin interpersonal relations in order to convey the legitimations. However, the legitimations are realized differently in textbooks with different dispositions. In predominantly chronologically-organized textbooks, the legitimations emphasize images depicting historical artifacts, the cultural value of the authorship and genre discussions. Thematically-organized textbooks concentrate on legitimations concerning contemporary literature and images, identification and the interplay of the reader and the text. One conclusion is that although all textbooks in this research are intended for theoretical programs in upper secondary school, the textbooks convey different discourses of literature and thus provide different conditions for the teaching of literature which raise the question of equivalence. A second conclusion is that the interplay between the textbook author and the reader is emphasized, although there is a lack of critical and analytical perspective. There are generally few references to contemporary theory, and male/female authorships are treated unequally. All in all, the textbooks seem to be more concerned with convincing students, in text and images, to read literature than actually provide them with substantial analytical tools.

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C2: Literature

Why should students study fiction in school?

Chair: Guilherme Romanelli

Room: C.201C

Time: 10:15-12:15

Ylva Frøjd

University of South-Eastern Norway

Country: Norway

Why should students study fiction in school? An analysis of Norwegian textbooks in literature didactics. Reading and studying works of fiction no longer has a self-evident place in Norwegian schools. This is due to several factors: firstly, a curriculum reform introduced in Norway in 2006 (LK06) marked a shift from a content-oriented curriculum from 1997 (L97) to a competence- and goal-oriented curriculum. The 2006 curriculum reform states that students shall acquire a broad “text competence”; reading non-fiction is regarded as equally useful as reading fiction for obtaining this (Eide 2010, 46). Secondly, young people’s reading of literature is in decline in Norway, and research shows that teacher students read less than average (Skaar, Elvebakk & Nilssen 2016). When compared to students in the past, today’s aspiring teachers thus seem less likely to have a personal interest in reading fiction. If future generations of young people in Norway are to read and encounter works of fiction in school, textbooks aimed at students in teacher training programs will need to make a convincing case for reading fiction and why students in Norwegian schools may benefit from it. My paper analyzes a selection of Norwegian textbooks on literature didactics, published after LK06, and is aimed at students studying to be teachers of Norwegian. In particular, I examine how these textbooks discuss and justify the study of fiction in Norwegian schools. Do the textbooks refer to traditional values and arguments for reading fiction, such as nation building and personal Bildung? Have traditional values been translated to contemporary “competences and learning goals”, or are they being replaced by an emphasis on teaching literacy skills? Moreover, to what extent do the textbooks frame reading fiction as a means for achieving certain goals or experiences (e.g. aesthetic experience) or for learning a certain skill (e.g. reading skills)? Finally, I also discuss whether we can find arguments for reading fiction that are applicable only to works of fiction (and not, for instance, to non-fiction or films and other media).

Methodologically, I start by mapping the selected textbooks on literature didactics, all of which were published after the LK06 reform and aimed at students in teacher training programs. I then do a content analysis, where I examine the authors’ reply to the didactic “why” rather than the “what” and “hows” of reading fiction. Besides using an inductive approach, where I sort the various arguments thematically, I discuss how the different strands of arguments relate to various views on the purpose of schools. Here, I draw on Gert Biesta’s concepts of qualification, socialization and subjectification.

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C3: Sciences - the significance of the textbook

Preservice Science teachers' perceptions of textbooks in Japan: from the perspectives of teachers and learner

Chair: Andy Smart

Room: C.338

Time: 10:15-12:15

Shingo Uchinokura

Kagoshima University

Country: Japan

It is important to explore the role of textbooks and educational media in teaching and learning science. The pedagogical quality of science textbooks is examined through text and representational analysis and content analysis (e.g., Khine, 2013; Suehiro & Uchinokura, 2018), and their usage is investigated through quantitative and qualitative analysis (e.g., McDonald, 2016). In the Japanese educational context, science textbooks follow national education standards (Course of Study) and are authorized by the Ministry of Education. The quality of education and usage of science textbooks are inextricably connected. This is usually based on stakeholders' views and beliefs about science, science education, and general education settings. This study explored preservice science teachers' perceptions of science textbooks from the perspectives of teachers and learners.

Fifty-seven undergraduate students from the same university in Japan, studying either education or science to become science teachers, participated in the study. Both courses may be required for science teachers in secondary schools. Sixteen students from the faculty of education learned the pedagogy of science as a compulsory subject, while forty-one from the faculty of science learned it as an optional subject.

The online questionnaire contained one question to capture the preservice teachers' perceptions of the role of science textbooks from the perspective of teachers and learners. Text-based data were analysed through text-mining methods, such as cluster analysis, using KH Coder (Higuchi, 2014).

The preservice teachers' descriptions of science textbooks from the perspectives of teachers and learners were divided into seven clusters each, through hierarchical cluster analysis (ward method). Clusters from the perspective of teachers focused on the importance of textbooks as teaching material, content standards of science, visual and self-learning aids, knowledge base and science reference book, lesson plans and assessment standards, curriculum sequence, and minimum standards and guidance resources. The clusters from the perspective of learners were the learning materials for lesson preparation and review, a good teacher produces original teaching materials that replace the science textbooks, aids for visualizing, conceptual learning, and memorizing, the content standards for the achievement test, the knowledge base of science, reference and reading books, and the tools important for enhancing cognitive and affective aspects in science learning.

Preservice teachers believed science textbooks to be an important knowledge base for teachers and learners and are the content and assessment standards for science education. This agrees with the views of in-service teachers who participated in the international survey, in which around 80% admitted that science textbooks were their basis for instruction (Martin et al., 2012). Despite the difference in the training courses, the students agreed that the science lessons followed the textbook sequence and that reorganizing teaching content and/or producing original teaching material are signs of good science teachers. The preservice teachers' perceptions seemed to be influenced by the educational context and discourse, such as teaching textbooks and teaching through textbooks.

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C3: Sciences - the significance of the textbook

The relationship between the given and anticipated range of knowledge in textbooks: a quantitative analysis of Japanese science textbooks from the 5th to 8th grades

Chair: Andy Smart

Room: C.338

Time: 10:15-12:15

Teiko Arai and Kyo Kageura

The University of Tokyo

Country: Japan

As textbooks are one of the main sources from which students obtain new knowledge, the way they describe knowledge is as important as the knowledge they contain (cf. Khine, 2013). Textbooks not only describe knowledge but also suggest a potential range of knowledge to be anticipated. Some descriptions are self-sufficient while other descriptions make readers think of the range of knowledge that is not directly given in the descriptions. Here, we analyse the relationships between the given and anticipated range of knowledge in Japanese science textbooks, by using quantitative methods. In Japanese education, recent work shows that the descriptions in textbooks may be one cause of the so-called "primary-secondary learning gap", i.e. the difficulties in learning that students face when they move from primary school to junior high school (Arai et al., 2017).

We focused on terms that represent concepts and evaluated how their occurrences in textbooks suggest to readers to anticipate the potential range of terms, by extrapolating the text size to infinity (which reflects the "complete knowledge" anticipated by the "extended" textbooks). We used the large number of rare events (LNRE) models (Baayen, 2001). Once we obtain the anticipated number of terms or population number of types, we can evaluate the status of descriptions in texts in terms of concepts.

We used four textbooks from 5th to 8th grades (5th and 6th grades are the last two years of primary school and 7th and 8th grades are the first two years of junior high school). P5, P6, S1, and S2 refer to each of these textbooks. We extracted the main body of the texts, excluding chapter or section titles and headings. As terms, we used index entries of each textbook. The basic quantities are:

#Sentences #Word Tokens #Word Types #Index Terms (T)

P5 1067 16962 1621 63

P6 1214 20092 1782 97

S1 1168 23904 1989 158

S2 1292 27486 2069 174

We applied LNRE models with different parametric distributions, i.e. Log-normal (LOGN), generalised inverse Gauss-Poisson (GIGP) and a series of Zipfian distributions (Baayen, 2001; Evert & Baroni, 2007), and used the best-fit models to estimate the population number of terms (S).

We found that T/S , the ratio between given number of terms (T) and anticipated number of terms (S), becomes smaller as grades progress, with a clear gap between primary school textbooks on the one hand and secondary school textbooks on the other. The primary school textbooks are described in such a way that the descriptions do not leave margin for anticipating further knowledge. Textbooks S1 and S2, on the other hand, are described in such a way that makes readers anticipate new concepts to occur.

We are currently working on: (1) detailed analysis of descriptions of concepts in the textbooks, and (2) how these correlate with students' experiences of reading textbooks. In the presentation, we will give full details of data, techniques, interpretations and references.

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C3: Sciences - the significance of the textbook

Introducing an intellectual and digital resource in teachers' activity: the case of the Education through Research model and the StudentResearcher Digital Notebook

Chair: Andy Smart

Room: C.338

Time: 10:15-12:15

Charlotte Barbier and Eric Bruillard

Université Paris Descartes

Country: France

In 2016, the French educational program, *Les Savanturiers* - which promotes the implementation of science projects in the classroom - lead a consortium whose aim was to design an inquiry-based learning environment (*Caisse des dépôts et des Consignation*, 2016). The artefact hereby designed - the Carnet Numérique de l'Elève-Chercheur or Student-Researcher Digital Notebook (SRDN) - is meant to implement the Savanturiers projects and their investigation method, called "Education through Research" (ETR) (*Les Savanturiers*, 2018). It includes an 8-step model based on a series of activities starting with the collection of students' questions and ending with the communication of their research results. This paper presents an ongoing empirical research investigating how teachers incorporate and interconnect an intellectual resource (the ETR model) and a digital one (the SRDN) into their activity system. Our research was guided by the following questions: How do teachers interpret and use these pedagogical resources? How do they integrate and adapt them to conduct their own class project? To what extent does the integration of these resources change teachers' activity systems?

In order to get data on teachers' projects with their students as well as their use of the resources, we studied the first lesson of 7 projects and implemented a follow-up of 4 of them, using non-participant observations. We are also conducting semi-structured interviews with teachers to know more about the pedagogical objectives they pursue, their usual teaching practices and their perception of the resources. We analyze our data using Engeström's activity theory framework (1987) to highlight tensions created by the introduction of the resources within the teachers' activity systems.

Our preliminary results show that, due to usability problems, most of the time the SRDN causes disruption in teachers' activity. These problems, coupled with a lack of explicit connections between the model and the SRDN, may lead teachers who wish to change their practices thanks to the Savanturiers program to redefine the object or outcome of their activity. Thus, the stated objective of their project changes as the project progresses. In some cases, it moves from teaching the scientific approach to helping students improve their writing skills.

To some other teachers, the Savanturiers program is not seen as a means to change their practices but rather it provides them with a framework that legitimizes their preexisting practices. Therefore, these teachers do not precisely follow the ETR model and use only the parts of the resources that fit their teaching style, leading to a lot of discrepancies between the model and actual projects in the classroom.

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C4: Roundtable

The role of (SME) educational publishers for school education and their challenges between Open Educational Resources, edtech start-ups and multinational platform companies

Room: C.332

Time: 10:15-12:15

Christoph Bläsi, Peter Bagoly-Simo, Steffen Sammler, Annekatriin Bock and Sören Peter Sörensen
Johannes Gutenberg University

Country: Germany and Denmark

This round table, for which researchers and practitioners come together, takes the fact as its point of departure that in most European countries the production of educational materials is left to the private sector – and that the implications of this are not much covered by research. It focuses on the fact that this situation is currently (and particularly in the case of digital materials) challenged from different directions, e.g. because of the need for high investments as well as the necessity to compete on a tight specialist labour market.

In the face of a whole range of fundamental current challenges to educational publishers – another major one, the nationalization of the provision of educational media in some east central European states, we will not tackle –, we will discuss aspects of the private-sector provision of educational materials, highlight the specific situation of (family-owned) SME publishers, present first analyses as well as examples of the challenges and also discuss where this might lead, what seems desirable and what could be done interventionally (e.g. with respect to the financing, the approval and the selection of educational materials) to achieve it. Analytically, we mainly work with categories and methods from strategic management (value chain and business model analysis, etc.), information systems (the concept of interoperability etc.) and communication as well as publishing studies (production, distribution, reception of media and their contexts); the data originate mostly in in-depth case studies.

Aspects of the regulatory regimes for educational media in European countries (with market efficiency, diversity, and innovation among the objectives) and insights from research on the specificities of Open Educational Resources will initially be presented by a scholar from Georg Eckert Institute and the specific assets and competencies of (SME) educational publishers by a scholar from Johannes Gutenberg University. An executive manager from an educational publisher in Denmark will round off the input for the round table discussion by presenting analyses concerning its strategy with respect to innovation, particularly considering user involvement in editorial and developmental processes.

Participants

Annekatriin Bock, Georg Eckert Institute for International Textbook Research, Braunschweig (D)

Sören Peter Sörensen, Systime, Aarhus (DK)

Christoph Bläsi, Johannes Gutenberg University, Mainz (D)

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Janello: Wertschöpfung im digitalisierten Buchmarkt (‘Value creation in the digitised book market’), 2010

Kammerlander / Prügl: Innovation in Familienunternehmen (‘Innovation in family companies’), 2016

C4: Roundtable

A caesura for curriculum development and educational media production (not only) in Central and Eastern Europe?

Room: C.332

Time: 10:15-12:15

Peter Bagoly-Simo, Miha Kovac, JimMcCall and Steffen Sammler
Georg Eckert Institute. Leibniz Institute for international textbook research, Brunswick
Country: Germany, Slovenia, Great Britain and Denmark

Research on the societal transformations initiated by the 1989 revolutions has been largely concentrated on political, economic and social effects in the former socialist countries. A closer look on studies in the field of education shows that research is still mainly focussing history education and history textbooks. The production process of curricula and textbooks in the transformation period itself has (with a few exceptions: Kovac 2004) not been yet object of deeper comparative studies.

From a more distant view in time and close to the accessibility of historical archives the round-table brings together academic researchers and practitioners from the field of publishing industries and textbook consultancies acting as key stakeholders in the transformation process in the early 1990s.

Based on personal experiences, private and institutional archival sources, the round-table presents first results of a joint research project on 1989 as a caesura for curriculum development and educational media production and discusses ideas, expectations and disappointments of contemporary actors in the field of educational publishing in Central and East European countries. The participants discuss crossing and missing as well as successful cooperation strategies between Western and Eastern media developers. They put forward that Central and Eastern European systems of educational media cannot be defined as one monolithic bloc before 1989, but developed different rationalities of questioning or overcoming centralized curriculum development and single textbook policies. In this focus 1989 will be used as an example for the study of stability and change in the political, economic and cultural frameworks of textbook production in time and space.

Participants

Dr Steffen Sammler (Georg Eckert Institute. Leibniz Institute for international textbook research Braunschweig)

Jim McCall, former senior consultant (British Book Development)

Prof Miha Kovac, (University of Ljubljana)

Prof Peter Bagoly-Simo (Humboldt-University Berlin)

References

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C5: Digital educational resources

Does student motivation in preparation for class increase when digitally supported preparation materials are made available?

Chair: Thomas R.S. Albrechtsen

Room: C.312

Time: 10:15-12:15

Tine Juhl Wade and Jane Bang

VIA University College

Country: Denmark

As senior lecturers on the BA International Sales and Marketing Management Program and the AP Degree Marketing Management Program at VIA University College, the researchers of this study have experienced an increasing problem with students being unprepared for classes where textbooks and academic articles have been the only preparation materials supplied.

The following hypotheses were defined:

1. A central reason for the low degree of student preparation is rooted in a lack of motivation for the provided preparation method – purely text-based preparation materials.
2. We can increase student motivation for preparation by introducing selected digital tools in the preparation materials.

Two types of digital preparation tools (digitally available book with interactive features, animation videos and podcasts) were offered to two groups respectively: Danish students on the BA level, and international students on the AP level. The objective of uncovering levels of motivation informed the choice of a qualitative research design, where in-depth interviews of eight students across the population were conducted (Kvale & Brinkmann, 2015). The respondents were selected based on variety in preferred learning styles (VARK) (Flemming & Mills, 1997) to gain nuance in respondents' experiences and thereby contributions to the study.

The eight in-depth interviews are transcribed and analyzed using coding to categorize the findings. The coding takes its starting point in the motivational theory by Deci & Ryan (2000, p.54): "To be motivated means to be moved to do something ... someone who is energized or activated towards an end is considered motivated."

- Availability of materials has an impact on the degree of motivation for preparation: "I am more likely to re-start preparation with this (podcasts/video) than with a book."

- Layout of materials has an impact on the degree of motivation for preparation: "It's easier to get it with these different methods. I remember more. The visual helps me remember."

- Independence of time and place has an impact on the degree of motivation for preparation: "The podcasts – it's nice that you can do something else while you are learning."

- Variety in materials has an impact on the degree of motivation for preparation: "Sitting down and watching the video, then standing up and listening to some podcasts, and then sit down to read the infoslides with all the visuals."

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C5: Digital educational resources

Augmented Reality and textbook

Chair: Thomas R.S. Albrechtsen

Room: C.312

Time: 10:15-12:15

Maria Filomia

University of Perugia

Country: Italy

This study presents a systematic review of the literature on augmented reality (AR) textbooks. As factors of investigation, the analysis uses the subjects of the searches learner type, the typologies of technologies used, the benefits and the difficulties highlighted. The use of AR has become the subject of research also in the educational field, and it is precisely the ease of use both through mobile devices and PCs that has prompted numerous studies and applications in every school order. AR is positioned in a continuum between the real and virtual environment and has the following three characteristics: it must combine the real and virtual worlds, it must allow real-time interaction with the user, and it must be made in a 3D space. AR is considered as a hybrid and immersive learning environment that promotes the following in students: exploration of the real world; motivation; acquisition of research skills; development of critical thinking and problem-solving skills; communication through collaborative learning activities.

One of the educational uses of AR is related to its integration into books with analog texts, providing readers with the advantages of both media. With printed books, readers look at images, turn pages and read text without any external technology. However, with AR, users can view additional multimedia materials such as 3D virtual models or videos and manipulate virtual objects using markers present in the text. The use of objects visually integrated with the textbook should allow students to understand and put into practice the contents learned. Through AR, the pages of textbooks become dynamic sources of information. Even people without specific digital skills can still have a rich, interactive experience.

Eligible papers included in the systematic literature review were collected from journals and conference proceedings, from the Primo Unipg database. Primo Unipg is the University of Perugia's database of peer-reviewed literature and includes the most important databases. For the research presented here, the databases used were: Scopus (Elsevier), SciTech Premium Collection, OneFile (GALE), Science Citation Index Expanded (Web of Science); ProQuest Central; ScienceDirect Journal (Elsevier); MEDLINE/PubMed; JSTOR Archival Journals; Business Premium Collection; DOAJ; JSTOR Current Journal; ProQuest Business Collection; SpringerLink; Springer (CrossRef); IEEE Journal & Magazines; ProQuest Social Sciences Premium Collection; MLA International Bibliography.

We conducted searches using the following search string: "augmented reality" AND "textbook". The searches were conducted in January 2019 and yielded a total of 21 papers. The papers were filtered in accordance with the following inclusion criteria (school activities, use of RA in integration with textbooks have been selected) and exclusion criteria (extra-curricular activities, use of textbooks is only for the control group). We used no filtered language or geographic criteria.

After the filtering process, eight papers were identified as being relevant to this systematic literature review.

The temporal distribution of the articles identified is from 2014 to 2018. The documents were coded and analyzed by a researcher, who highlighted points related to the aspects to be analyzed. The small numbers of paper reveal that AR textbooks are not very widespread despite the results of the analyzed searches showing the effectiveness of their use in the educational context.

The analysis clearly highlights the advantages of using augmented textbooks in the teaching-learning process, especially in terms of expansion and facilitation in the acquisition of knowledge. Fun and play appear significant in increasing the motivation to acquire specific disciplinary knowledge, for example in science. Results suggest that augmented textbooks contribute to better learning results than traditional textbooks, in terms of increased literacy and deeper learning.

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C5: Digital educational resources

A reflection on the transposition of educational resources into educational software: the case of savanturiers

Chair: Thomas R.S. Albrechtsen

Room: C.312

Time: 10:15-12:15

Cisel Matthieu and Georges-Louis Baron

Laboratoire EDA

Country: France

Resources in education generally convey ideas and values existing before them, which are critical in any “transposition” into other artifacts, such as educational software. We have studied how a set of resources designed by an innovator in the field of science education, *Les Savanturiers*, has had a substantial influence on the design of an educational software, the Student-Researcher Digital Notebook (SRDN). The SRDN was designed within a consortium constituted by a research laboratory, a company specialized in the field of digital resources, and *Les Savanturiers*. For several years, this latter program has been promoting project-based learning in the field of science education, both at primary and secondary level. It has developed a large set of resources in order to provide training to partnering teachers, and notably an eight-step model mimicking the inquiry process in research laboratories.

One of the main objectives of the SRDN is to structure the inquiry process. The artefact corresponds to an Inquiry-Based Learning Environment (Linn, 2013). Similar to Berkeley’s WISE environment (Slotta & Linn, 2009), it has been designed to offer a set of scaffolds specific to each step of the project, from the design of the initial research question to the redaction of the final conclusions. We studied the interrelation between the structure of the SRDN and the set of resources that the Savanturiers used to train partnering teachers.

We base our analysis on the notion of intermediary object (Jeantet, 1998; Vinck, 2009), within the general framework of Engeström’s (1987) activity theory. An intermediary object is an artefact that circulates among the different actors during a design process, in order to convey information and build consensus. It can carry common symbols and meanings that work as a frontier between different worlds, in our case, a laboratory, a company and a team composed mostly of former teachers. To analyse the design process of the SRDN, we followed an ethnomethodological approach and attended nearly all the meetings convened by most members of the consortium. We collected the intermediary objects that circulated during these meetings and analysed when the resources from the Savanturiers were used, as well as how it affected the consensus during the decision-making process.

As a result, we showed that the set of scaffolds and tools developed within the SRDN seems to largely derive from existing key resources in Savanturiers teachers’ training program, and more specifically the eight-step model. The use of such a resource as a basis to design a software raised numerous issues, as it led to the development of functionalities that were partially redundant with existing software, therefore questioning the added-value of the project as a whole. Our interpretation is that the stakeholders of the project found easier to base and to legitimize the design of the artefact upon an existing model conveyed by an existing resource than upon the long and complex wish list that emerged from field work.

We conclude our contribution by a methodological claim on the value of intermediary objects as a lens to grasp the complexity and the multivocality of a design process, and how the study of mediating resources can help to reveal underlying dynamics.

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C6: Digital resources

The double adaptation in children´s use of educational screen texts

Chair: Thomas Illum Hansen

Room: C.317

Time: 10:15-12:15

Anne Kristine Solberg Runestad

University of Stavanger

Country: Norway

The aim of this article is to contribute to an understanding of the engagement and meaning-making of pupils in first grade (age 6) when they encounter educational screen texts during preliminary reading. The article present one of the main findings from a PhD research project that focused on the ways that text content, form and use influences the educational aims and the creation of meaning by children within the classroom environment (Runestad, 2015). Theories of reading have been described both as relevant, not relevant, incorrect and meaningless. Based on Weinreich´s (2004) theory of adaptation and Knudsen´s theory of reader positions (Aamotsbakken & Knudsen, 2011: 146-153; Knudsen & Mortensen-Buan, 2010), I have explored first grade children´s creation of meaning in their reading of pedagogical screen texts. The results of the study point to children´s need for guidance and support from real people in their real environment for reading, even when they read self-contained multimodal screen texts. The defining of pedagogical screen texts is based on Selander and Skjelbred´s theory of pedagogical texts (Selander & Skjelbred, 2004), and Schwebs and Otnes´s screen texts concept as texts that depend on being displayed on screen to not lose any of their meaning potential as text (Schwebs & Otnes, 2006). The defining of texts also takes its point of view from the theory of multimodality (Kress & Van Leeuwen, 2006).

The classroom study takes a qualitative methodological approach, inspired by ethnographic and narrative methods. The empirical data consist of two educational screen texts and observations of six pupils' use of screen texts within a station teaching context (a method where children move around the classroom from teaching centre to teaching centre as the lesson progresses).

Educational texts are adapted to audiences organised by age or grade. They are created to engage pupils in special ways to merge the learning outcomes described by the curriculum. However, the audiences of such texts also adapt in their reception of them. In fact, they do a double adaptation: they adapt themselves to the texts and the texts to their own horizon of understanding. Based on the results of the study it can be concluded that first-year pupils are motivated to learn and that they engage and make meaning with educational screen texts, even when these texts appear to be rather meaningless, which is often due to the situational context. Although the screen texts could be assessed as meaningless, the pupils' reading is to an extent meaningful. When they were unable to adapt themselves to the text, they used different adaptation strategies to make meaning and stay by the text.

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C6: Digital resources

Designing digital teaching materials in food and health education

Chair: Thomas Illum Hansen

Room: C.317

Time: 10:15-12:15

Dorte Ruge

UCL University College

Country: Denmark

The primary aim of this qualitative case study was to investigate how pupils in a primary school project developed knowledge, skills and ownership while they engaged in creation of multimodal and digital learning materials in the form of “games”. Furthermore, the secondary aim was to investigate how the group of teachers, who scaffold pupils’ work, developed their own didactical and digital roles and competences (cf. Hanghøj 2013). The project was conducted in a public school with strong competences on how to apply and integrate digital learning methods in food- and health education (Ruge 2016). Filstedvejens School had a mixed demographic profile and was situated in Aalborg municipality in Denmark. The project was funded by the Danish Ministry of Education from 2018-2019. A professional software company had previously developed the basic framework with the special affordance that provided primary pupils with the opportunity to develop their own games within the basic framework. Teachers attended six workshops during the project period, where they learned about the development of games and how to teach pupils to create content in simple games. The research question focused on pupil learning outcomes from participation in the multimodal development of analog games and the transformation into simple digital games. The themes in the games related to food- and health education from a cross-curricular pedagogical approach. Preliminary results indicated that pupils developed knowledge, skills and ownership, which contributed to pupil learning. This result was regarded as a possible outcome of teachers' participation in the workshops in the project. Furthermore, results indicated that participation in workshops led to mutual inspiration and self-efficacy among teachers with regard to own role in the development of multimodal teaching materials. Furthermore, teachers became more aware of the benefits and challenges from project-oriented collaboration around shared educational materials in school (cf. Mikkelsen & Graf 2015). A limitation of the study was the short time and the fact that only one school was involved. However, more schools are expected to use the new digital educational materials in the future due to the link to Ministry of Education. A larger follow-up study would be optional and also relevant with regard to the promotion of digital competences and development of 21st century learning-skills among pupils in Danish schools.

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C6: Digital resources

Does the use of ICT in education promote student learning?

Chair: Thomas Illum Hansen

Room: C.317

Time: 10:15-12:15

Stig Toke Gissel, Louis Kørhørsen and Alysson Ramos Artuso

UCL University College

Country: Denmark and Brazil

Many countries have carried out massive investment in ICT for educational purposes. However, cross-national studies and various meta-studies suggest a neutral or even negative impact of high levels of ICT use in education (Mayer, 2010; Bulman & Fairlie 2016). Furthermore, it has been suggested, that positive relations between the use of ICT and academic outcome is often seen in studies where ICT is used in specific contexts for specific educational purposes (Comi et al.; 2017; OECD, 2015; Tamim et al., 2011).

We suggest that the generic question of the impact of ICT in education does not make sense, unless we answer it through a nuanced approach. Thus, we need to further investigate what type of ICT is tested or explored in the research literature, how the use of ICT in the studies is framed and supported, which types of outcome measures and academic outcome are in play, and for whom. This paper presents the findings of a systematic, critical literature review including research from 2013 to 2018 specifically looking at empirical studies determining the outcome of using ICT for educational purposes in primary and lower secondary school in subjects first language (L1), second language (L2), mathematics, and science. The aim of the review is to answer the questions: How is the impact of ICT usage in schools researched, how is ICT defined, what outcome measures are used in relation to what aims for learning, what do the studies find, and how are the circumstances surrounding the interventions or settings studied.

Analyzing the included studies from these different perspectives allows us to explore how the themes are interrelated and to attempt a nuanced answer to the question of the impact of ICT on student learning. The review is broadly inclusive vis-à-vis research methods and designs and aims to explore how the impact of ICT usage is researched – and how study and intervention design may influence the outcome.

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C6: Digital resources

Textbooks and companion websites: investigating transmedial sequentiality

Chair: Thomas Illum Hansen

Room: C.317

Time: 10:15-12:15

Ommund Carsten Vareberg
University of South-Eastern Norway
Country: Norway

"For some years, practically all students in Norwegian upper secondary schools have had access to a personal laptop computer, and in classrooms digital educational resources are now as widely used as textbooks (Norwegian Centre for ICT in Education, 2013). Since the introduction of the current curriculum in 2006, with its emphasis on digital skills, the main Norwegian publishers have supplemented their textbooks with companion websites.

The increase of resources, media and platforms adds a complexity to the educational media systems that might lead to fragmentation of the systems. One could argue that a learning material system should provide different kinds of resources to support the teacher's creation of progressive learning sequences based on the learning and teaching material in the system. The aim of this paper is to investigate the sequential relationships between the different elements in cross media learning material systems, and how these relations are expressed. The material being investigated are five textbooks in Norwegian as a school subject (L1) for upper secondary school and their companion websites. Theoretically the paper draws on the text linguistic concepts like cohesion and coherence (Beaugrande & Dressler, 1981; Halliday & Hasan, 1976; Hasan, 1989) as well as Eco's semiotically oriented reception theory (Eco, 1979, 1994).

To investigate the sequentiality the following tasks are carried out:

- mapping out the phoristry (the scope and direction) of the references to other resources in the system
- investigating the explicit and implicit progression between elements
- investigating how the navigation system facilitates the possibility of creating different reading paths or trajectories through the system.

One finding from the investigation is that the learning material systems do not offer much support for sequentialization and integration of the diverse resources in the system across the different media. This task is therefore mainly left to the teacher. Another finding is that the digital resources tend to neglect the associated textbook as a relevant source of knowledge for working on assignments. The text analysis indicate that the teacher should compensate for this by providing the learners with more demanding assignments to make sure there is a progression that includes opportunities of using the content from the textbook in a way that corresponds with the level and complexity of the presentations in the textbook.

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Parallel Session D

12 September 2019, 15:45-17:45

D1: Spanish/Portuguese

Meanings of contextualization in Physics textbooks approved by the PNLD

Chair: Jesús Rodríguez Rodríguez

Room: C.201A

Time: 15:45-17:45

Bruno Henrique Cersosimo Lous and Tânia Maria Figueiredo Braga Garcia

Universidade Federal do Paraná – NPPD

Country: Brazil

Physics teaching in Brazil has been based upon the conception of didactic transposition (Chevallard 1991) throughout the last three decades. This concept can be used to explain the lack of knowledge contextualization regarding to its production context which characterizes education. In general, courses are seen as disconnected from the students' reality – situations and phenomena (Delizoicov & Angotti 1991). In order to resolve these issues, debates in the field of Physics didactic point to the necessity of teaching in a contextualized way. This orientation was incorporated to the Brazilian curricular orientations and textbooks evaluation criteria in the last decades. It has also been incorporated into the criteria for evaluation of textbooks, it has appeared in several items of the assessment sheet used by specialists who analyze, approve or reprove the collections to be made available for teachers' selection. This evaluation of textbooks is sustained by a public policy called the National Textbook Program (PNLD). In the last Physics textbooks evaluation (PNLD 2018), among the established criteria in official documents was the necessity of the book to present the contents of Physics taking into consideration its contextualization regarding social, historical, cultural, economic and daily life aspects. This document also warns the authors and editors to avoid artificial contextualization of these matters which, considering the existing curricular tradition in this subject, may characterize a challenge. From this point of view, the general objective of the research is to analyze the ways of contextualization present in the Physics textbooks approved by the PNLD. The specific goals, based on the exploratory study, are: identifying the collection teachers have ordered the most on the PNLD; identifying contextualization concepts present in the Physics Didactics literature and in official documents; and analyzing the contextualization concept present in the selected collections. Methodologically, this is a documentary research, in which the contents of selected collections are analyzed. The empiric work was divided into stages, starting with the selection of themes and chapters that could offer a higher potential for contextualization. After previous reading, data collection was made considering the contextualization resources of the textbooks using Valcárcel (2018) propositions. Two main indicators were taken into account: 1. The use of Philosophy and History of Science; and 2. The relationship between scientific and daily knowledge. The data collected, in which analyses are still in progress, point towards a common denominator in the textbooks even though they are produced by different authors and editors. The textbooks seem to be very alike regarding the contextualization resources used, suggesting a homogenization on the themes and situations presented. Furthermore, there seems to be a tendency of using historical and daily contextualization as a didactic resource rather than a process of re-contextualization of the knowledge regarding its production.

D1: Spanish/Portuguese

The relationship between textbooks and other resources: digital educational objects suggested in PNLD Physics textbooks

Chair: Jesús Rodríguez Rodríguez

Room: C.201A

Time: 15:45-17:45

José Leandro Lima de Souza and Tânia Maria Figueiredo Braga Garcia

Universidade Federal do Paraná - NPPD

Country: Brazil

The theme of the research is the relationship of textbooks with other teaching resources. It assumes the need to discuss the teaching of Physics to the young in order to face difficulties that have been found by studies that analyze the results of this school subject through the point of view of the teachers and students. The research also used as a reference the current debates regarding the possibilities of Information and Communication Technologies (ICT) making teaching more interesting and meaningful, considering that devices such as cell phones and computers are present in the daily life of schools and young students, including in low income populations. The research problem was proposed based on exploratory activities which verified that, in the last 5 years, the Physics textbooks have been added suggestions for the use of other digital materials, partially due to the requirements of the official evaluations and partially as a result of the new technologies available in social life. Digital educational objects (DEOs) have been suggested to teachers and used with positive results, as evidenced by Heidemann's research (2016) and in reports of experiences published by different means, which suggest possible transformations in the way textbooks are used, which need to be studied. Based on these references, the objective of the research is to analyze the proposition of suggestions for the use of simulators by the authors of the Physics textbooks approved by the National Textbook Program (PNLD) and in use in Brazilian schools. The program, maintained with funds from the Federal Government, is intended for evaluation and free distribution of books to all public school students, for all school subjects and grades, which points to the relevance of research in this field. As specific objectives, we propose: to check Physics textbooks offered by PNLD for teacher selection, verifying if they establish relations with the use of other materials, especially the DEOs; to find suggestions of sites that present simulators with themes related to Modern Physics; to analyze elements of the content and form of the simulators, verifying their possibilities of contribution to the teaching and learning of the specific contents; and to analyze the point of view of high school students on the use of simulators. In the first stage of the research, the methodology included the content analysis (Franco 2001; Garcia 2017). After a general analysis of each textbook, units related to Modern Physics were analyzed in four selected textbooks. Due to such results, questionnaires and interviews were carried out to understand the point of view of the students. In the last phase was carried out one activity with 28 students to observe the use of simulators. The analyzes showed that the books present suggestions for use of passive digital objects (such as videos, for example), with low potential to the students' interaction; three of the four books analyzed present more suggestions in the manual for teacher than in the students' textbooks; the students showed interest in the use of simulators and pointed out their preference for active educational objects.

D1: Spanish/Portuguese

Guidelines on Physics evaluation processes present in teacher's manuals distributed by the PNLD

Chair: Jesús Rodríguez Rodríguez

Room: C.201A

Time: 15:45-17:45

Lucas Macedo Cunha and Tânia Maria Figueiredo Braga Garcia

Universidade Federal do Paraná - NPPD

Country: Brazil

The discussions regarding methodologies of Physics teaching for young High School students have been intensified since the curricular reforms that took place in Brazil in the 1990s, aiming to face the difficulties in teaching and learning this knowledge that are traditionally recognized in the school culture of the country. However, literature reviews (Cunha & Garcia 2018) show that the discussions about the evaluation of learning in this subject have not occupied equivalent space in public debates, events and scientific publications. Therefore, we found a gap that motivated this study and that defined its problem around the topic of the evaluation in Physics. Considering the existence of a public policy for the distribution of textbooks for schools and the official understanding that, in Brazil, textbooks are also an instrument for teacher training, the research questions were formulated towards guidelines on conceptions and evaluation procedures presented by the authors in the Physics textbooks approved by the National Textbook Program (PNLD). The program requires that the books be accompanied by guidelines for teachers, both with regard to elements that contribute to the use of the textbooks as well as to clarify the conceptions and procedures used in the elaboration of the work, showing its relation with national curricular guidelines and scientific and didactic advances in the specific subject. Thus, textbooks are a relevant empirical source to understand what kind of knowledge the educational proposals wish to bring to teachers. Conceptually, the research takes the elements presented by Perrenoud (1998) regarding the conceptions of evaluation as reference, in particular the characteristics of the formative evaluation that has great circulation in the country and were used to guide the definition of the categories of analysis. The research is documentary and uses content analysis techniques (Franco 2001; Garcia 2017) from previously defined didactic categories. The empirical material is composed of two didactic collections of Physics for High School, approved in the PNLD 2018. The criterion of choice of these works was the fact that they were produced with different conceptions of teaching and organization, allowing a comparative study between the two collections. The data were produced from the analysis of the content of the teacher's manual, giving particular attention to the evaluation guidelines and structuring the results around the following elements: a) suggested procedures for teachers; b) evaluation instruments and procedures presented; c) conceptions and purposes of the evaluation. Preliminary results showed that there is a predominance of guidelines within General Didactics, which suggests a deepening of the analysis of the relations between the references used by the authors of the selected works and the conceptions present in the official curricular documents emphasizing the specific indicatives to evaluate the Physics knowledge, in the scope of Physics Didactics.

D2: Diverse curriculum

How do teachers organize their educational resources?

Chair: Anders Stig Christensen

Room: C.201C

Time: 15:45-17:45

Magali Loffreda

Ecole normale supérieure Paris-Saclay

Country: France

Our contribution aims to report a PhD on teachers' organization of resources: How do they store textbooks, working paper of lessons preparation, or information that they find on the internet? In which storage spaces? And for what purposes? Does this activity contribute to developing a sense of professional effectiveness? More specifically, how does this activity enable teachers to act on their environment as professionals of teaching in the making and in development? In order to better understand this issue, which is currently poorly documented by research, a multidimensional analytical framework articulating three analytical plans (macro, mezzo, micro) has been developed to take into account the environment in which this activity takes place. The macro plan concerns institutional, cultural and social structures, as well as the technical tools developed to support the organising activity of individuals. The mezzo plan concerns the teacher's professional environment, which can represent a second level of information where he or she can participate in teacher networks. Finally, the micro plan concerns the teacher's personal environment, which consists of his or her own resources and tools. On the theoretical level, this analytical framework has been developed and enriched by the contributions of various studies in the fields of educational sciences (ReVEA project, 2014-18), organization sciences (Glushko, 2016), information and communication sciences (Moeglin, 2010; Pédaque, 2006), and the history of knowledge, science and technique (Waquet, 2015). These fields cluster concepts that inform this activity.

From a methodological point of view, we used this framework to conduct empirical investigation based on qualitative methodologies that resulted in the development of five corpuses. These corpuses in turn enrich the analytical framework. Two are based on teachers' speech. The first is the result of three interview campaigns conducted between 2016 and 2018 in a high school in order to document practices in a professional context. This investigation allowed us to observe and interview 23 teachers. A third wave of interviews began in March 2018 at teachers' homes, to observe their personal work environment. This investigation enables us to develop an in-depth case analysis. The second corpus is based on analyses of discourse elements from teacher network websites. The other three corpuses concern speech that we will describe as "prescribers" with regard to the organizing activity of resources and the use of various educational products. Two corpuses are developed, on the one hand, by the speeches of school publishers and industrialists of the France's EdTech, and, on the other hand, by those of the Ministry of National Education. The fifth and final corpus is based on the study of books for teachers. All these analyses are enriched by regular monitoring of the question of educational resources at a time of major ongoing reform of the French education system. Finally, this work is accompanied by the development of a lexicon in order to highlight the existing tools used by teachers.

The first results of our PhD dissertation emphasize the complexity of organizational practices implemented by teachers. The latter include several actions, are based on heterogeneous supports, are manifested by forms of "do-it-yourself", and cover several dimensions.

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D2: Diverse curriculum

Instructional coaches and the dilemmas of supporting teachers' use of learning material

Chair: Anders Stig Christensen

Room: C.201C

Time: 15:45-17:45

Thomas R.S. Albrechtsen and Karina Kiær

University College SYD

Country: Denmark

Research shows that instructional coaches can improve the professional development of in-service teachers (Gibbons & Cobb, 2017; Woulfin & Rigby, 2017), but in this process they also often face different dilemmas in their daily coaching practice. For example, in the form of different kinds of collegial resistance to what they do (Jacobs et al., 2017). Not so much research has been done in understanding how instructional coaches make sense of their support teachers' selection and use of learning materials i.e. the selection and use of textbooks in different school subjects. Purpose of the presentation is therefore to discuss the question: What dilemmas do instructional coaches experience in their professional support of their colleagues' selection and use of learning materials?

In the presentation we will try to answer this question from the perspective of sense-making theory (Weick, 1995; Coburn & Woulfin, 2012). We base our discussion on findings from two qualitative research projects. The first is an empirical study done in the years 2015-2018 in 13 public schools from the same Danish municipality in the form of qualitative interviews of newly educated instructional coaches with the aim of finding out how they experience the new structure and practice of instructional coaching in their schools. The second study is a field study that began in January 2019 and consists of observations and interviews of literacy coaches in a Danish public school looking at how these coaches make sense of especially using assessment data in supporting colleagues in their instructional decision making. Findings from the studies show the following dilemmas in the instructional coaching:

1. Colleagues often need to be persuaded, that participating in coaching activities is "time well spend". Sometimes instructional coaches help find the right learning material quick, and in this way save the teachers some time. In other situations, they "overload" the teachers with possible learning materials to use, instead of doing a "pre-selection", and this can cost teachers extra time to find out what is best for them.
2. Another dilemma is the visibility of instructional coaches. Not all their colleagues seem to be aware of what the functions of the coaching are and how the coaches can help them select learning materials and other kinds of guidance.
3. Third, instructional coaches sometimes express the dilemma of being a peer on the one hand and being part of the administrative control on the other hand. This has to do with their legitimacy among the other teachers and how to justify selecting one kind of learning material instead of another.
4. The fourth challenge is that the coaches often experience a lack of "deep learning" in the coaching activities. Often teachers seek the coaches when they need to solve momentarily problems or finding useful learning materials for teaching a specific theme, but seldom the coaching activities are moving a step further in the form collaborative inquiries of the learning materials, data or student products. Possible solutions of these dilemmas will be discussed in the paper presentation.

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D2: Diverse curriculum

Analysis of the recent examination and authorization results of the new primary school textbooks in Japan: focus on the textbooks of the new formal “special subject of moral”

Chair: Anders Stig Christensen

Room: C.201C

Time: 15:45-17:45

Akira Ninomiya

Hiroshima University

Country: Japan

In recent years, there were two major and drastic reforms of National Curriculum Standards (The Courses of Studies) in Japan. The first one was the reform of moral education, introducing the Special Subject of Moral as a formal subject in the curriculum for primary and junior high schools in 2014. The new “textbooks of the subject of moral” authorized formally by the Ministry of Education began to be used at primary schools in 2018. The second major reform was the drastic change of the national curriculum standards introducing the curriculum theory of competency-based curriculum and at the same time, this is very unique one, the guidelines of changing teaching methods from knowledge-based instruction to so-called active learning and teaching. It advocates the “independent and responsible, dialogue and communication based, and deep learnings”,

In accordance with those national curriculum standards reforms, the textbook authorization laws and regulations were also revised so that the new textbooks should be developed for the Subject of Moral, and to meet the new ideas of the curriculum reforms, including the new concepts of learning.

The paper focuses on the analysis of the background and reasons why the “Special Subject of Moral” was introduced as a formal subject, what changes of moral education were expected. In the past, moral education has been taught, but there was so far no formal school textbook. Some supplementary materials for reading have been used by the teachers. But according to this reform of moral education, the teachers must use one textbook for Moral Education once a week to teach in any schools in Japan. It must be interesting for the audiences to find what they look like.

What characteristics of the authorized textbooks of “Moral” would be identified? The author chooses the two typical and the most popular textbooks based on the textbooks adoption ratio, analyses the editorial principles of those textbooks which were submitted to the Ministry of Education for the authorization process, and the reports of the authorization opinions of the Ministry of Education (what opinions were advised to modify the drafted textbooks based on the authorization regulations and standards for the “Moral”).

And also, in order to clarify the difference and effects of moral education reforms by contrasting and analyzing the contents of “Supplementary Readers of Moral” and the formal textbooks of “Moral” as the special subject, for the case of the two textbooks chosen in the above analysis. The author would expect there should be quite differences of choosing the moral education contents and topics between the two types of instructional materials.

D2: Diverse curriculum

The textbook as a “curriculum de facto”

Chair: Anders Stig Christensen

Room: C.201C

Time: 15:45-17:45

Alessandra Anichini and Laura Parigi Rudi Bartolini

INDIRE

Country: Italy

What relationship has established between textbook and curriculum? What is the relationship between digital auto-produced educational content and curriculum? These are the main questions behind a research carried out by INDIRE during the year 2017/18 with a sample of 800 Italian schools belonging to the Avanguardie Educative Movement that are involved in a process of autoproduction of textbooks and educational resources. The survey, aimed at reconstructing a cross-section of the behaviors related to textbook adoption and its use in disciplinary teaching, has provided, as a first step, the submission of a questionnaire to the teachers of schools of all levels. The questionnaire was developed according to the four textbook's functions defined by Alain Choppin and to some indications provided by the various documents and UNESCO guidelines published from 1979 to the present. The questionnaire has been divided into four sections: the first section has investigated the role that teachers assign to the textbook, the representation of textbook for their professional practice; the second tried to clarify the main habits of use of Italian teachers within the classroom, in relation to the students work; the third focused on the idea of quality that the teachers have of the contents, of the form and of the didactic setting of the textbooks; the fourth, finally, investigated the relationship with digital and supplementary content (the recent legislation obliges Italian teachers to adopt books in digital or mixed form). We collected 1528 completed questionnaires, for a total of 32088 close ended answers that have been analysed with statistic descriptive analysis method. An open answer relative to the representation of textbook has been analysed with content analysis method. The research aims at clarifying how the textbook is still today the key tool of educational activities and can be considered, for all purposes, the true depository of a "curriculum de facto", carried out within the classes, sometimes disregarding the ministerial indications. Although in Italy there no longer exists, in fact, since 2013, a real ministerial program, but National Guidelines that provide the traces of a curriculum that schools can adapt to their different contexts, the textbook continues to be considered the first “custodians” of the state program. The research carried out on a specific sample of "innovative" schools seems to reveal the strong resistance of traditional textbook concepts and its undisputed utility in student training programs. However, the theme of auto-production of supplementary contents seems to creep into this static conception, partially subverting the school's structure. A further extension of this research would like to involve the students, as first actors in the training process, asking them to tell us in detail about their relationship with textbooks in this digital age.

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D3: Use of textbooks/games and specific contexts

A systematic review of research on how students and teachers use didactic learning materials in L1

Chair: Bruce Knight

Room: C.338

Time: 15:45-17:45

Stig Toke Gissel and Bettina Buch

UCL University College

Country: Denmark

We present the results of a systematic review of research into how students and teachers in primary and lower secondary schools use didactic learning materials. Didactic learning materials are learning resources that are made for purposes of teaching and/or learning. We include both digital and analogue learning resources and methodically diverse research from years 2008 to 2018. We are interested in finding out how much research there is in this field, which aspects of use are investigated, what the research can tell us about the use of didactic learning materials, and how the research was conducted methodically.

A prior review (Knudsen and colleagues, 2011) of research on learning resources in the Nordic countries and five other European countries between 2000 and 2011 showed that research in learning materials was primarily preoccupied with content and form, and rarely their use by students and teachers. Methodically, observations in classrooms and interviews were seldom. Wikman and Horsley (2012) compared textbook research conducted in Finland and Australia and found that in the area of “research analyzing activities in classrooms also including the use of educational aids” there were too few findings and hence excluded it from their review.

We will present the results of our review and our method of analyzing the included studies.

Furthermore, we will reflect on the issue of generating search terms for identifying research on didactic learning materials, which in turn has implications for both future research as well as the ability of researchers to participate in an international, cumulative dialogue. Finally, we will propose a research agenda for moving the field forward.

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D3: Use of textbooks/games and specific contexts

The concept of learning platforms

Chair: Bruce Knight

Room: C.338

Time: 15:45-17:45

Jens Jørgen Hansen

University of Southern Denmark

Country: Denmark

This paper will contribute to theoretical development based on the research question: How can learning platforms be conceptualized as a category in pedagogical theory? The article has a theoretical aim and will investigate learning platforms as technology and category in a pedagogical perspective and thus contribute to developing a concept of learning platform pedagogy.

The paper is based on "conceptual research" as a methodology to develop a theory of learning platforms. Data is based on existing design of learning platforms and findings and reports from the now finished project "Use of digital learning platforms" (Danish Ministry of Education, 2017).

The research interest is based on a critical position, which deals with how to develop and improve new practice and theory on the use of learning technologies in schools. Learning platforms are a new medium for action and communication in school and present a new condition for teaching; they can therefore both help to develop and challenge teachers' pedagogical work. The concept of learning platform is not well established. This research will contribute to develop an understanding of learning platforms in relation to three dimensions: as a framework factor for teaching, as a didactic tool for planning and as a place for learning.

As a framework factor, learning platforms are both an overwhelming framework factor and an expression of a politically-determined condition for the school's work and a teaching-related framework factor that has a strong impact on different pedagogical areas. Learning platforms do not determine the teacher's teaching, but articles indicate that it is important that teachers and other actors in the school develop and understand the learning platforms' ability to expand the learning space of teachers. As a didactic tool, learning platforms influence the teacher's design of learning. As a learning place, the teacher has the opportunity to design new virtual learning places and establish new types of meetings between student and subject, between student and other pupils, and between pupil and teacher. The learning platform as a place of learning opens a pedagogical perspective on what must be taught, how the content should be represented and what activities students must work with and how the students' participation in the learning place can be scaled down.

The paper will finally discuss how teachers can develop a reflective, critical and creative approach to learning platforms, because they have the potential to create a new framework for teaching, new places for teaching and new tools with which to plan and design learning.

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D3: Use of textbooks/games and specific contexts

University students' use of study resources in relation to approaches to learning

Chair: Bruce Knight

Room: C.338

Time: 15:45-17:45

Zuzana Sikorova, Iva Cervenkova, Marek Vaclavik and Ivana Fialova

University of Ostrava

Country: Czech Republic

The paper reports on an exploratory research focused on the study habits of university students concerning the use of study resources. The 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. By the term "study resources", any text resources are understood, including the iconic ones, which are used as sources of information or means to acquire the course content. In recent years, some studies in the broad research field of higher education concerning teaching and learning resources have occurred, the vast majority of those focused on the comparison of printed and digital materials. Apart from this strong thematic stream, research on the use of university study resources still remains rather limited. The understanding and diagnostics of learning approaches in this research stem from the theory of approaches to learning based on classical studies by Marton and Säljö on deep and surface approach (e.g. Marton & Säljö, 1997) and the conception of strategic approach according to Entwistle and Ramsden (1983).

Considering the lack of research findings on the usage of study resources and study habits of university students related to resources, and since the aim was to verify if there are differences in the study habits of students in relation to their approaches to learning, 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 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 been adapted, 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 all six faculties of the University of Ostrava from December 2017 to February 2018 and a total of 2,671 questionnaires were obtained. The analyses of normality of 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 sizes significance were also elicited.

The results showed that the students most frequently used their own notes from lectures and seminars, presentations created by teachers, and course readers. 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 the students used study resources almost solely at the end of the course. The statistical analyses proved the study habits significantly differed according to the approaches to learning with only one exception: the students unambiguously preferred learning from printed texts over learning from texts in the digital form.

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D3: Use of textbooks/games and specific contexts

The uses of Brazilian high school physics textbooks: does the teachers' academic background matter?

Chair: Bruce Knight

Room: C.338

Time: 15:45-17:45

Alysson Ramos Artuso, Kelly Vanessa Dias da Silva and Caroline Dorada Pereira Portela

Universidade Federal do Paraná/Læremiddel.dk

Country: Brazil

Brazil has one of the biggest governmental purchases of textbooks in the world. Public investment reaches US\$ 500 million annually (Brasil, 2019). It is an economic issue, but also a relevant research problem in pedagogical terms. One of the criticisms of Brazilian teaching materials is the poor initial teacher education as preparation for using the textbooks. Therefore, the presence of textbooks (or other teaching materials) is not enough to improve the teaching-learning process (Loch & Romanowski, 2013). This research therefore focuses on high school physics textbooks with the research question: "Does the teacher's academic background matter in the use of Brazilian high school physics textbooks?" The answer comes from the data of a wide exploratory statistical analysis involving Brazilian high school physics teachers. The data were collected through a cross-sectional survey developed with questions based on previous qualitative studies, with responses from 359 teachers from five Brazilian regions between 2012 and 2014. The full survey has 70 questions, but this paper selected only 12: 7 about types of textbook use in the classroom, 4 about frequency of textbook use, and 1 on the teacher's academic background. The answers to the last question were divided into three groups: without a physics teaching degree, with a physics teaching degree, and with a graduated course in the educational field, like a master's degree or PhD in physics teaching. Response options to the other questions had a Likert scale: for example, "How often do you use textbooks with the students during the class?" Answers vary from "Never (0% of classes)" to "Always (100%)". Statistical analysis of the data showed that the main function of the textbook is for teachers to prepare classes, even more than for students to use in the classroom or home. When used by students, the textbook is primarily used for solving classroom exercises and homework assignments. The results also show that the first group - teachers without a physics teaching degree - use the textbooks more than other groups to learn from the textbook and to plan their classes. There is no statistical difference among the groups in the use of textbooks during the class, for students to do activities like reading the textbook, doing exercises, following the teacher's explanations, research, working in group assignments or doing experiments. According to the results, there is practically no difference in the use of Brazilian high school physics textbooks according to teachers' academic background.

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D4: Orality and writing

Orality in L1 textbooks and educational media

Chair: Georges-Louis Baron

Room: C.332

Time: 15:45-17:45

Lene Illum Skov and Dorthe Carlsen

University College SYD

Country: Denmark

In school and in L1, oral talk takes up a lot of time. In a general didactic perspective, orality is at the heart of our very understanding of teaching in the sense of “adjusting through conversation” (von Oettingen, 2016: 73). On the other hand, orality as content and subject does not take up much space in L1, and orality is often seen in a general didactic perspective. Therefore, an “oral didactic” is requested (Høegh, 2017). The present study is part of a larger project which explores various aspects of, and perspectives on, orality in L1, conducted by the University School, www.universitetsskolen.dk. This sub-study centers on analysis of textbooks, based on the following research question:

- How and to what extent is orality the teaching-subject in three of the most widely used textbooks for L1 and one theme-based, award-winning textbook with particular focus on orality?

Textbooks are regarded as a didactic point of departure and a source of inspiration, both in relation to the selection and the organization of academic content, and in the selection of specific teaching activities in the specific lesson: “The textbook is the most dominant kind of curriculum” (Hodgson et al., 2010: 87). Teaching materials/textbooks have two sides: the textbook-as-work plan (intended use) and the textbook-as-practice. The present study is a study of the intended use of the textbooks, and therefore it does not have the prospect of what is actually happening in the classroom with these textbooks. We are not studying their use or determining their impact. However, it is reasonable to assume that the teaching materials play a central role in the classroom. The analysis of the textbooks is a didactic content analysis (Hansen, 2012: 202) with special focus on orality in L1.

The subject field of the study is four didactic teaching materials for L1 at the intermediate stage: *Fandango 5* is a book-based didactic textbook, while dansk.Gyldendal.dk and danskfaget.dk are digital didactic teaching materials. These three teaching materials were chosen as analytical objects because they are at the very top of a quantitative study of materials, conducted by a group of didactic researchers at the Danish University of Education, both in terms of use and of positive assessment (Bundsgaard, Buch & Foug, 2017). The teaching material/textbook *Ordet er dit* stands out by being a theme-based teaching material on orality. In 2017 it received second place in the Ministry of Education’s Teaching Aids Prize, which is given to “a new teaching material of remarkably high quality”, according to the website of the Danish Ministry of Education.

This study contributes new empirical knowledge about the potential of teaching materials in relation to supporting the teacher in teaching orality in L1. The analysis of the textbooks and educational media is complemented by video analysis of classroom teaching, in which it is examined how orality is done in the existing practice of the teacher. Preliminary analyses show that oral instruction as a subject field is almost non-existent. Overall, the two analyses will lead to the development of a number of oral didactic approaches that are made to subject didactic experiments in the University School.

D4: Orality and writing

Sociomaterial methodology in writing research

Chair: Georges-Louis Baron

Room: C.332

Time: 15:45-17:45

Michael Jensen

Aalborg Universitet/UCL Erhvervsakademi og Professionshøjskole

Country: Denmark

Based on an analysis of writing as assemblage, this paper discusses the surprising relations and opportunities that emerging technologies may offer, breaking down the safety in spatial securities and moving towards “flux and flows rather than simple bounded space” (Fenwick, 2015). Being part of a study of writer identities and digital technologies in Danish teaching in two Year 6 classes at two municipal primary and lower secondary schools in Denmark, the paper presents a new perspective on digital literacies as sociomaterial assemblages (Baroutsis, 2018). Writing research is dominated by a normative approach to what writing is, or should be (Lillis 2018), and educational technology research typically understands digital technology in a restricted sense, as discrete mechanical artifacts (Fenwick, 2015). The study focuses on the complexities and dynamics of students and materials entangled in writing assemblages, asking how this perspective may not only change our research practices but also pedagogies.

What kind of relations and opportunities are offered in the entanglement of students, technologies, time, and space, and how can sociomaterial methodology examine more precisely how new writing assemblages are emerging?

Theoretically, this study draws on a sociomaterial understanding of literacy as heterogeneous assemblages (Freitas & Curinga, 2015; Baroutsis, 2018) with a focus on the constitutive entanglement of the social and material (Fenwick, 2015).

Assemblage theory rejects the notion of fixity and essentialism, embracing dynamism and fluidity. Challenging anthropocentric understandings of integral human agency, sociomaterial theory makes visible the sets of human and non-human actors that support an actor’s ability to feel, think, make, do, design, and learn. In a relational framework, rather than focusing on social and material actors as being distinct entities, relational thinking places the primacy on the prevalent relations in a setting (Decuyper & Simons, 2016).

Sociomaterial methodology offers specific analytic tools to examine more precisely how new assemblages are emerging, with “resources to consider systematically both the patterns and the unpredictability that make educational activity possible” (Fenwick, 2015). One key sensibility is that of symmetry, suspending the taken-for-granted distinctions between humans and material which should only constitute a possible end result, not the starting point of inquiry. The concern is how to analyze the distribution of actors and trace as many relations between actors as possible (Decuyper & Simons, 2016), to provide a sensibility to the messy materiality of practices.

Empirical material is from a pilot study that took place over a period of 4-5 weeks, informing an ongoing long-term study. Preliminary results indicate that the entanglement of heterogeneous materials produced language of discipline, but also transgression and departures from expected literacy practices, creating new innovative folds in the classroom discourse (de Freitas & Curinga, 2015). Activity that suggested purposeful or rule-governed student practices were in constant interaction with actions that were spontaneous, improvisational, and even disobedient, produced through an emergent moment-by-moment unfolding. Finally, the study indicates that agency should be seen as an enacted force emerging between students, materials, and space-time, not residing in individuals.

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D5: History

Textbooks, teacher's materials and digital media in teaching History: presence and intensity of use by teachers and students

Chair: Morten Rask Petersen

Room: C.312

Time: 15:45-17:45

Nicolás Martínez-Valcárcel, Matha Ortega-Roldán, Delfín Ortega-Sánchez and María José Baen Sánchez
Universidad de Murcia
Country: Spain

This work is part of research that started in 1996, analysing the teaching and learning of history in high school. It is important to understand what usually happens in the classroom before proposing other teaching options. In particular, the research studies the use and interdependence of textbooks, teacher's notes/materials and digital media, as a continuation of previous research (Martínez-Valcárcel (Ed.), 2018). The research has studied the use of these media based on the statement by Kolbeck y Röhl (2018): "How meaning is situatively and culturally made and in doing so highlights the ambiguity and dynamic nature of texts. Teachers and students using textbooks transform and adapt them by selecting texts and interpreting their content." (p.403)

The methodology is non-experimental qualitative design (Shalkind, 2017), in which description and interpretation are constituted as the axes of work. In order to select the participants, a cluster sampling was carried out over 136 teaching centres, with a confidence level of 95% and an error range of 13.5%. In the research, 53 students agreed to participate, from 39 secondary educational centres, representing 28.68% of the Autonomous Community of the Region of Murcia in the 2015-16.

The type of instrument used was a questionnaire involving 28 items: 16 of which were closed questions (yes/no) or Likert scale and 12 were open, inquiring in-depth about the valuations carried out. The most relevant results distinguish the presence (yes/no) and intensity of valuation of use of each of the three media in the classroom. Results show that teachers' notes/materials are included in almost all participants' statements (98.11%), with a high intensity of 88.67%. In second place was the use of digital media, which is found in practically all statements too (96,22%), but with less intensity (41.55%). Finally, textbooks are used in only 20 situations (37.74%), with 20.75% of intensity and importance, and always linked with teachers' notes/materials.

These results are analysed in greater detail in the 12 open questions, which show the sense of the overall valuations accomplished. On the other hand, we highlight the presence of digital media as resources of information (repository and search of contents), didactic resources (through work and presentations) and communicative resources (with teachers, between colleagues and with the Institute itself). The results of this research raise new questions: what is the relationship between teachers' notes/materials and textbooks? In addition, what processes do students follow and what means do they use in their history studies?

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D5: History

Textbooks and other teaching resources used in the school subject of history

Chair: Morten Rask Petersen

Room: C.312

Time: 15:45-17:45

Jens Aage Poulsen

HistorieLab

Country: Denmark

Textbooks and other teaching resources used in the school subject history

- Do these resources predominantly promote a perception of history that it is about the accumulation of factual knowledge, or do they facilitate students' historical reflection - and why?

History became a school subject in the late 1800s. The main task of the subject was to contribute to nation-building. The content of the teaching was transmission of a body of narratives about the great past of the nation, focusing on famous men and events. The narratives in the textbooks or told by the teachers were presented as a body of factual knowledge that the students simply had to acquire and not discuss, problematize or reflect on.

Although the aim of the school subject is now completely different, the question is what happens in practice with the teaching resources. Are the teaching resources used predominantly to facilitate transmission of knowledge about the past, or do they promote reflection and students' knowledge-building?

As of April 2019, the history project team is in the pilot phase: our focus is on getting a picture of how teaching resources are used in history lessons and identifying issues for further investigation. We are also testing appropriate methodical approaches. For instance, we completed classroom observations based on a matrix from Uwe Flicks: *Introduction to qualitative research* (2009). We video-recorded teachers' and students' use of different teaching resources and carried out semi-structured interviews with teachers and groups of students. So far, the pilot phase has involved five history classes.

In this presentation, I will discuss one of the issues we are considering: Do the teaching resources promote the students' perception that history is mostly about acquiring factual information about the past and to a lesser extent developing students' historical competencies and prerequisites for historical reflection? In that context: How is teachers' understanding of the school subject as well as the way in which they choose and stage teaching resources crucial for students' perception of history and how they use the resources?

In particular, I will present data from two school classes. In these, the teachers made very little use of didacticised teaching resources (history textbooks or teaching resource portals). Instead, they combined not-didacticised (semantic) materials and teaching resources that they had produced themselves.

According to the interviews, both teachers intended to strengthen students' historical competencies and promote their critical approach to history. The teachers did this, for example, with questions and activity suggestions. However, the students still mainly focused on factual knowledge of the past, and found it difficult to handle concepts and procedures about how our knowledge of the past is created and narrated.

This seems to be a general problem. Teaching resources rarely help students to understand how stories about the past are created or give them tools to strengthen their competences to think historically (Olsson, 2014, p.4). Several researchers of history didactics have criticized the prevailing concepts for teaching history. Among them is Stéfane Lévesque, who maintains that students do not acquire tools to relate critically-reflectively to stories about the past (Lévesque, 2008, p.14).

This history project is part of a large research project called in Danish "Praksisforskning af Læremidler" ("Researching the use of teaching resources"), launched by the Danish National Centre of Excellence for Teaching Resources. The two other school subjects in this large project are mathematics and Danish. The overall research question is: What influence do teaching resources have on teachers' and students' praxis, and what influence does their use in praxis have on the teaching resources?

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D5: History

Christianity and the Lotus: dealing with Buddhism in Belgian Catholic Religious Education before and after Vatican II: a case study starting from the analysis of religion textbooks for secondary education (1870-2000)

Chair: Morten Rask Petersen

Room: C.312

Time: 15:45-17:45

Jan Van Wiele

Tilburg University

Country: The Netherlands

In this paper I want, starting from the analysis of Belgian Catholic religion textbooks for secondary education, from 1870 up to 2000, to explore the image of Buddhism in Belgian Catholic religion education before and after Vatican II (1962-1965). In doing so, I will make use of a descriptive hermeneutic content analysis wherein, firstly, it is investigated how Buddhism is represented in the textbooks as creed, code, community and cult. Secondly, and related to this, I will try to determine the underlying theological paradigm that has formatted this image. For that, I will make an appeal to a number of contemporary theological constructs, such as “inclusivism” and “exclusivism”, which I believe lend themselves very well to the detection of the Catholic Church’s interreligious and intercultural positioning in education. Although somewhat different meanings for these concepts are given in the scholarly literature, I think one can fit these two “sensitizing concepts” into the following working definition. By “inclusivism”, I refer to the theological model in which it is recognized that other religions may possibly possess partial truth, and a certain possibility of salvation, on the condition that Jesus Christ functions as the norm and constitutive element of such truth and salvation. By “exclusivism”, I mean the theological model that sees Christianity as holding the exclusive monopoly on truth and salvation. By employing these comprehensive and unifying theological concepts in the textbook analysis, I hope to make a modest contribution to the history of the theology of religions in Belgian Catholic education and the Catholic Church itself for the period under investigation. In the contemporary educational and theological literature, one finds that a majority of authors are of the opinion that the dominant interreligious paradigm in the Catholic Church and education prior to Vatican II was exclusivist in nature and became inclusivist after Vatican II. A minority, on the other hand, holds that inclusivism was the dominant paradigm within the Catholic Church and its education during the whole period under investigation. With my analysis, I aim to lend greater weight to one these two positions, at least as far as Belgium is concerned.

As far as the period before 1950 is concerned, the source material is restricted to textbooks of apologetics. One simple reason can be cited for this: in the corpus of religion textbooks used in secondary education, they alone make explicit statements concerning Buddhism. This kind of religion textbooks disappeared around 1950 in Belgian religion education as an apart kind of religion textbook (besides church history textbooks, textbooks on biblical history and “devotional history”, “little” catechisms, ...) and were then replaced by more broad, general and unified religion textbooks, wherein more can be found concerning non-Christian religions and which therefore form the corpus of the source material after 1950.

Why do I base this research on textbooks? Because textbooks are considered to be part of the micropedagogical level, which itself is a blend of networks and structures finding their origin on the macro- and mesopedagogical levels (policy guidelines from governmental and educational bodies, prevailing pedagogical and ideological goals, ...) of an entire educational system. If, besides, in line with certain trends in educational historiography, one defines an educational system as a “school culture,” more specifically, as an entirety of values, norms, and expectations that is determining for the self-identity of a school and for the activities of its members, then it is self-evident that the textbook, as an “intersection” of an entire school culture, is a privileged source for finding the large “structures” or mentalities and identities that are constitutive of a “school culture.” In that way, with the religious textbook as a central source, I want to trace some of the large structures of the “grammar of schooling” that provided the format for Catholic interreligious and intercultural education in Belgium in the past.

Contrary to what could be expected from the majority of authors, the dominant interreligious paradigm underlying the representation of Buddhism during the period under investigation turned out to be mostly inclusivist instead of exclusivist in nature, and this during the whole period in question. This opposes the view that exclusivism was predominant within the Catholic Church and its education prior to Vatican II. This does not mean that there is no discontinuity: before Vatican II the focus in the textbooks is on the differences between Christianity and Buddhism, while around and after Vatican II there is a clear tendency towards emphasizing the compatibilities and parallels between both religions.

D5: History

Dialogues between the History textbook and other didactic materials: producing knowledge in History lessons

Chair: Morten Rask Petersen

Room: C.312

Time: 15:45-17:45

Edilson Chaves

IFPR/UFPR/NPPD

Country: Brazil

Based on teaching and research experience, we have investigated how historical fiction literature can contribute to the construction of historical knowledge among high school students, demonstrating that the production of such materials involving investigative activities developed by the students themselves, such as working with different sources, can be useful as evidences to produce narratives and materials which lead to new meanings to the studied past (Ashby, 2003; Shemilt, 1987). The students could rebuild historical situations based on the point of view of narratives about the past and their actors. Such reconstruction acts were based on evidences related to lessons about historical matters concerning topics as Renaissance and Humanism using sources brought by the books and by the teacher to approach and amplify their interpretations, allowing the students to elaborate more solid historical explanations both in their narratives and their presentation essays. A group of 35 students with ages varying from 14 to 15 years old in the first year of “integrated technical” high school (Ensino Médio Técnico Integrado) was involved in this project for eight weeks. The goal of this study was to show how the historical knowledge is necessarily the result of an investigation, no matter if it is related to History textbooks or other materials. This study was developed in three different stages. In the first one, we have worked with articles about the importance of using actual sources during History classes (Caimi, 2008; Pereira, 2008) and how the sources featured in the textbooks should not be taken as the only truth, once there is the possibility of different interpretations of the studied past. In the second stage, the students, based on the reading and discussion of a given literature book (*Inferno*. Brown, 2013), were able to understand that there are other sources, and these can be taken as evidences to the reconstruction of past events. In the last stage, students produced didactic materials for History learning, and they presented their specific experiences concerning the elaboration of such new materials through shared verbalization to their groups. The data provided show possibilities of educational materials under the form of infographics and podcasts with the formulation of History questions related to the studied themes and propositions of tasks which the students needed to consult a variety of sources, which has contributed to the development of the construction of the historical knowledge. The analysis of such data has also revealed that, despite the initial discussions about historical sources, in some situations the students ignored the use of actual sources and evidences – and that confirmed they have used these sources as simple pieces of information related to the past facts and events, or indicating the fiction book narratives as real past reports, with little or none ambiguity or refusal. Among the results, we were led to new practices in History lessons, in which the student is a protagonist in relation to their learning process, not only using didactic materials created by other agents, but contributing to the production of their own materials by investigative processes and based on evidences.

Parallel Session E

13 September 2019, 10:30-12:30

E1: Teacher training

Knowledge in the training of teachers: analysis of teaching manuals

Chair: Guilherme Romanelli

Room: C.201A

Time: 10:30-12:30

Léia de Cássia Fernandes Hegeto, Izzadora Silvestre Porcote, Luís Anselmo Bonarowski Dallagassa and Tiago Cordeiro dos Reis

Universidade Federal do Paraná/Læremiddel.dk

Country: Brazil

The research is part of an ongoing project of scientific initiation and aims to reveal the teaching knowledge present in the training of teachers, starting from the analysis of the manual “Pedagogia e Prática Docente” (Franco, 2012). The study is justified by the need to fill gaps in the research on readings designed for the education of teachers, recognizing that teacher readings should not be attested only in their materiality as an object, but also in the meanings that result from their inclusion in social processes, especially those that constitute the schooling of children, youth and adults.

Manuals are products and producers of school knowledge and practices (Bufrem, Schmidt, Garcia, 2006), as well as constructors of personal and professional identities. It is believed that these books guide teachers as they appropriate these readings in the act of teaching. Based on content analysis (Bardin, 2011), we reflect on the book *Pedagogia e Prática Docente*, which is part of the Teaching in Formation Collection from the *Saberes Pedagógicos* series, published by Cortez. The research question is: What pedagogical knowledge is disseminated in the manual *Pedagogia e Prática Docente*?

The methodology of this qualitative research is a bibliographical survey, which located articles on teacher readings and manuals for teacher training published between 2010 and 2018. The search revealed 15 articles and 30 manuals. These manuals cover the challenges of teachers training and also discuss topics of General Didactics reflect on teaching practice. After selecting the articles, it was discovered that 13 use the manual as a historical document and analyse its contents (Choppin, 2004), 1 article uses the manuals as an object of study and 1 article has the objective of formalizing a database to assist in research dealing with manuals. Preliminary results show that didactic-pedagogical manuals have multiple concepts and can be considered elements of school culture. During the research, the following categories of analysis were selected: - Topics presented by the author; What philosophers and pedagogues say; Pedagogical practices in multiple educational networks; Action research; Methodological leadings used. It is expected the research will reveal the knowledge disseminated in the books of readings for teachers, recognizing that these books propose new methodologies and leading ways in class, the reflection of practices while articulating the desires of social groups, being influenced by social, cultural and political conditions of the Brazilian educational context.

E1: Teacher training

Content ‘Loss’ or Content ‘Fatigue’? Analysing Teacher Preparation for textbook use in India

Chair: Guilherme Romanelli

Room: C.201A

Time: 10:30-12:30

Kishorkumar Darak

Tata Trusts

Country: India

In spite of increasing global discourse challenging conformity to textbooks (mainly printed textbooks) and increasing concern about teachers’ autonomy due to such conformity, textbooks play a central role in the world of schools. The centrality of textbooks is particularly important in parts of the world that faces the challenge of universalisation of quality education. Since the colonial times in India, the daunting examination system based largely on memorisation of textbooks has historically forced the educational discourse to revolve around textbooks. Thus, textbooks play the most crucial role in schools and the teacher becomes the prime agency of transacting them. As important educational media, printed textbooks are not merely a teaching–learning artefact but also tools of discourse validated by and acceptable to dominant classes in society. In countries like India, textbook development, production and free distribution is primarily the responsibility of provincial governments. While there is an increasing effort to add digital content or augment textbooks, printed textbooks continue to be the prime means of facilitating teaching and learning. Many states in India typically undertake a decennial review of textbooks, leading to new textbooks. The process of reviewing or developing new textbooks is followed by universal teacher-training focusing on content, important features, changes made and embedded pedagogies. Considering the sheer number of teachers (about 8.5 million in total), capacitating teachers to use new textbooks becomes a herculean task. It is observed that over decades, the methods of professionally preparing teachers to use new textbooks have undergone substantial changes. From training only a few teachers, through secondary or tertiary cascade training, to reaching thousands of teachers at a time through electronic and digital media, the system claims to have become more efficient and far-reaching. Against this background, this paper attempts to analyse changing trends in teacher preparation for using textbooks in the western Indian province of Maharashtra. By chronicling the history of about five decades of teacher training for textbook-use, the paper attempts to explore longitudinal changes and their impact on teachers in order to understand how teachers negotiate with prescriptive and suggestive instructions received from state agencies. By analysing the processes teachers employ in using textbooks, the paper also tries to understand the nature of teacher autonomy in using textbooks. A desk review of training-related documents from the state agency is expected to create a chronicle of changing trends in teacher training on textbook use. Further, the paper employs qualitative methods through structured and semi-structured interviews of selected teachers, officials from the textbook production bureau, and members of committees designing textbook-related training and of agencies executing large-scale teacher training on textbook use. The primary qualitative data will be analysed for understanding the impact of training and how teacher protect their professional autonomy in the regime of prescriptive training.

E1: Teacher training

Enhancing the didactic proposal through the illustrated and interactive e-book: a focus on teacher training

Chair: Guilherme Romanelli

Room: C.201A

Time: 10:30-12:30

Arianna Morini

Roma Tre University

Country: Italy

In order to qualify the teaching proposal, it is important to reflect on the introduction in the school context of a large variety of types of text. This is strategic both for developing the reading skills and for promoting reading motivation (Moretti & Morini, 2014).

The educational innovation is a complex process that involves the transformation of educational practices. Thus, the introduction of new technologies in the school context is only an act that must necessarily be accompanied by a rethinking of practices, spaces and times of learning (Yelland, 2018).

Individualizing the teaching by offering many books in different formats allow the teachers to effectively respond to the needs of the students. Providing both e-book and printed book can be considered a key to bringing struggling readers and unchallenged readers closer to reading (Morini, 2017).

It is essential to train teachers on the criteria with which to select high quality materials. Furthermore, it is very important to reflect with the teachers about the strategies needed by the students to successfully read the different kind of books. In this respect, the Professional Development-Research paths are interesting because the teachers are involved in research project in their classroom. Thus, the teachers can be more involved and motivated. This kind of training paths could also make the teachers more aware of their skills and able to produce a change in their teaching strategies.

The present research intends discuss the results of a Professional Development-Research path in which the teachers were trained in the selection and use of illustrated and interactive e-books.

The two main research questions were:

- 1) Is the Professional Development-Research paths effective to promote and enhance the teachers' skills and allow them to qualify their teaching styles?
- 2) How do the introduction of new reading practices impact students' motivation to read?

The data collection tools used in the research were: the MESI tool (Moè, Pazzaglia & Friso, 2010) used with the teachers to detect teaching strategies, sense of self-efficacy and "incrementality" that is to say the perception about the ability of produce a real change.

The Motivation for Reading Questionnaire (Wigfield & Guthrie, 1997), in the Italian translated version, was used to detect students' motivation to read at the beginning and at the end of the research.

The results of the research show that the Professional Development-Research paths turns out to be strategic to improve the classroom reading practices of the teachers. Furthermore, the proposal to introduce high quality illustrated and interactive e-book has increased the students' motivation to read.

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E2: Geography

Textbook tasks in upper secondary geography education: types of thinking and influence of curriculum contexts - the case of the Netherlands and North-Rhine Westphalia

Chair: Ommund C. Vareberg

Room: C.332

Time: 10:30-12:30

Uwe Krause and Tine Béneker

Fontys University of Applied Sciences

Country: The Netherlands

This research aims at understanding the differences in geography education between the Netherlands and North-Rhine Westphalia (NRW). Both contexts are comparable in respect of their size (population and surface) as well as school system (vertically organized), the researched topic (part of both curricula) and the sample (upper secondary education in preparation for university access). The research question is: What type of thinking tasks are fostered by textbooks in upper secondary geography education and how is this influenced by the curriculum context? The curriculum contexts are analysed by using Bernstein's (2000) concepts of classification and framing. Where classification is about the regulation of the content, framing is about the control over the transmission. The Dutch curriculum context, opposed to that of NRW, is characterised by a weaker classification, a strong framing in respect of mechanisms of control, but weak in terms of production of legitimate texts. This becomes visible in the curricula as well as in the type of examination in the central high-stakes exams.

Textbook tasks about the Global Food Issue in textbook series currently used in the Netherlands and in NRW have been examined. The tasks are categorised based on the questions and expected answers derived from answering models. As a theoretical framework, Bernstein's (2000) ideas of recognition and realisation rules, the cognitive processes behind the revised taxonomy of Bloom (Anderson et al., 2001), and the geographical concepts of Taylor (2008) are used and integrated into a categorisation scheme. This categorisation has been considered as plausible and feasible by teacher educators and teachers.

The results show clear differences between both curriculum contexts. Tasks aiming at the categories "analyse", "evaluate" and "create" and their underlying cognitive processes are scarce in Dutch textbooks, which confirms earlier findings (Krause et al, 2017). Furthermore, the Dutch textbooks and answering models pay little attention to the production of full argumentations and texts by learners, contrary to textbooks in NRW. On the other hand, a considerable amount of Dutch textbook tasks aims at explaining (given) correlations, an aspect required in PISA tests. When it comes to geographical thinking, there is in both contexts a deficiency in tasks considering the concept of perception & representation: the Global Food Issue is hardly considered as a problem that is partly caused and visible in high-income countries (consumption) or from a perspective of entitlement, as discussed in current literature (Daniels et al., 2016).

Thus, in a curriculum context characterised by a combination of strong classification and framing, which focuses on the production of complex textual structures, textbook tasks stimulate learners to use conceptual subject knowledge themselves to engage with geographical issues, and foster higher order thinking. In a context of weak classification and a framing with a focus on output control, tasks aim at the recognition of substantial and conceptual knowledge.

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E2: Geography

13-09-2019

101

Use of geography textbooks in upper secondary schools in the Netherlands

Chair: Ommund C. Vareberg

Room: C.332

Time: 10:30-12:30

Uwe Krause

Fontys University of Applied Sciences

Country: The Netherlands

Although textbooks play a significant role in geography education, there is scarce research about their use (Fuchs et al., 2014; Krause et al., 2017). One possible reason is that as a complex educational tool that combines various means, e.g. (non- continuous texts, tasks, digital media (Bagoly-Simó, 2014), it is hard to grasp in empirical research. However, this combination of means designed to reach curriculum aims (Meyer, 2011) makes the textbook as powerful as it is. The aim of this research therefore is to explore the role and use of geography textbooks and their components in upper secondary lessons, to better understand and find significant correlations that might help to improve geography education.

In a non-representative sample, 25 lessons (1200 minutes) of upper secondary schools in the south of the Netherlands were filmed and observed, and the teachers as well as a group of students were interviewed. Teachers were asked to teach an average, representative lesson, which has been checked with the students. The lesson activities and use of the textbook (elements) were scored per minute with an observation scheme. All interviews were held in a semi-structured way, transcribed, categorised and used in the analysis of the lesson observations, which was done by using SPSS. The foci of analysis were the use of continuous texts, maps, diagrams, visuals and tasks.

Preliminary results show that the textbook was used in more than 40% of the lesson time, whereas in more than 30% of the time the teacher used materials s/he had developed or found him-/herself. So far, the following significant relations have been determined: The textbook was used less by younger and less experienced teachers compared with the oldest and the most experienced cohort. Furthermore, teachers with less experience used more of their own materials than teachers with 16-25 years of experience. The use of visuals correlates positively with the use of texts and whether the materials had been developed/found by the teachers themselves, but negatively with the use of tasks at the level of remembering (revised taxonomy of Bloom). When it comes to texts, teachers spend more lesson time, if the texts don't derive from the textbook. Moreover, the use of diagrams is related to teacher talk. Teacher's experience also plays a role when it comes to the use of lower-order thinking tasks (remembering, understanding and applying): in general, teachers with less experience use them less, with the difference between the group of 11-15 years and that of 15-25 years of experience being significant. Finally, male teachers use maps much less than female teachers, but the difference is statistically not significant because the latter group size is too small. More results and their implication for geography education will be given during the presentation.

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E2: Geography

Local-global relationships in textbooks: contributions to the studies of the didactics of Geography

Chair: Ommund C. Vareberg

Room: C.332

Time: 10:30-12:30

Neusa Maria Tauscheck and Tânia Maria Figueiredo Braga Garcia

Universidade Federal do Paraná

Country: Brazil

In the field of Social Sciences, a consensus has been built on the need to accept the endless tension between the one and the multiple, the particular and the universal as a permanent feature of human society (Wallerstein et al. 1996). Towards this question, the problem of the reported research is inserted in the theme of local-global relations in the teaching of Geography, focusing particularly on the content and teaching procedures explained in textbooks. The objective is to analyze how this relationship is expressed in the textbooks used in the school practices of a Middle School (6th to 9th grades). Conceptually, the study is based on the notion of place (Santos 1999) that allows us to guide and define Geography teaching towards situating the different dimensions that intersect in the local geographic space. It is also supported by the understanding that textbooks are visible elements of the disciplinary code (Cuesta Fernández 1998) and thus, in part, express the traditions that set Geography as a school subject in each moment of its historicity. From the methodological point of view, what is presented in this work are the results of documentary research in which the contents of textbooks were analyzed, as a stage of a broader research, of an ethnographic nature involving participant observation and other field procedures. The research is being developed in a school located in the Municipality of Morretes, on the coast of the state of Paraná, southern Brazil. The students belong to twenty-four rural communities, some nearby and others distant and the school is administratively considered as urban, which is a geographic specificity that causes tensions in terms of territory and establishes privileged conditions for the development of research on the local-global relations theme. From the curricular point of view, the national guidelines indicate the need to take the reality of students as a starting point for working with teaching contents in the different school subjects and these indications were incorporated into the evaluation criteria of the National Textbook Program (PNLD). Based on these references, the textbooks used in the school were analyzed and the data allow us to claim that: a) there are specific sections in which content and teaching methodologies were linked to the concept of Place in the local-global relation; b) in other sections, although the relation is not explicit, there is information and procedures that make space for teachers to create favorable situations for this relationship to occur; c) there are situations of appreciation of the local knowledge, meeting in part the requirements of the PNLD public notices. Considering the results of the analysis of the books used, we evidenced the possibility of developing the observations of the teaching practices in the school, particularly regarding the use of the textbook, in order to finalize the research project.

E2: Geography

Teaching about nuclear energy in the Geography curriculum: moving from energy literacy to nuclear imaginary

Chair: Ommund C. Vareberg

Room: C.332

Time: 10:30-12:30

Natalija Mažeikienė and Odeta Norkutė

Vytautas Magnus University

Country: Lithuania

The authors of the paper have been working on development of route of educational nuclear tourism in the Ignalina Nuclear Power Plant (INPP), Lithuania. Methodology of creating the route implies establishing links with formal school curriculum and attracting to the site of INPP teachers, pupils and their families as potential visitors and tourists with educational needs and interests. Geography curriculum has been chosen for an analysis as a school subject which potentially covers a range of nuclear energy related topics. General question which authors of the paper are trying to raise is how geography curriculum and teaching/ learning geography could be improved by developing energy literacy (including nuclear literacy), applying context-based learning approach and using opportunities of outdoor learning environment (in this case - nuclear educational tourism in the site of INPP). Geography becomes a central school subject in building the understanding and addressing current energy issues and dilemmas. At the same time geography curriculum becomes 'a curriculum of survival' and "a curriculum of the future" aiming at promoting environmental literacy (Lambert, 2013, Butt, 2011). Geography curriculum is considered as the most important school subject in learning about globalization and in education for sustainability.

The paper focuses on the analysis of geography curriculum and teaching/ learning materials (textbooks) with specific focus on energy literacy and the topic of nuclear energy. The research presented in the paper is based on theoretical framework of energy literacy provided by Kirby et al (2015), Bodzin et al (2013) and DeWaters et al (2013). Energy literacy is regarded as an educational effort that helps pave the way toward a more energy-secure future by empowering individuals to choose appropriate energy-related behaviors throughout their daily lives (DeWaters & Powers, 2011). The research presented in the paper identifies essential elements and features of developing energy literacy in geography curriculum and provides recommendations how to create cross-curricular approach and interdisciplinary energy literacy model and address main expectations toward the new role of geography subject. The study encompasses three stages: the analysis of the elements of the geography curriculum in relation to energy literacy and nuclear energy topic, the analysis of the content of geography textbooks, and interviews with teachers of geography. The research has shown that knowledge about nuclear energy and energy sources is not consistent in textbooks, the teaching/ learning materials create only partial preconditions for problem-based and context-based learning. Research participants (geography teachers) consider nuclear energy as a topic which lost its significance because of the closure of the Ignalina Nuclear Power Plant (INPP). The authors of the papers provide recommendations how to ensure more consistency in developing the energy literacy in addressing new approaches toward geography curriculum by applying a context-based approach to the teaching about energy (fossil fuel, nuclear, renewable energy), its significance within specific geopolitical, economic and social contexts. The authors discuss an opportunity how to create an integrated curriculum on the topic of nuclear energy by combining formal and informal learning on the subject, creating connections with other subjects (physics, chemistry, environmental subjects) and including insights and inspiration from humanities and social sciences subjects (literature, history, cinematography and arts) which present nuclear imaginary.

The paper presents findings of the research project "The Didactical Technology for the Development of Nuclear Educational Tourism in the Ignalina Nuclear Power Plant (INPP) Region (EDUATOM)". This research is funded by the European Regional Development Fund according to the supported activity "Research Projects Implemented by World-class Researcher Groups" under Measure No. 01.2.2-LMT-K-718 grant (No. 01.2.2-LMT-K-718-01-0084/232).

E3: Textbook selection and evaluation

13-09-2019

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Textbooks: implications for teacher practice

Chair: Zuzana Sikorova

Room: C.201C

Time: 10:30-12:30

Carmencita Ferreira Silva Assis and Jesus Rodríguez Rodríguez

IFG

Country: Brazil

The textbook is widely given to teachers in their pedagogical practice, as an instrument of support for teaching. Currently, the National Didactic Book Program provides 82% of students in Basic Education with free textbooks which undergo a pedagogical evaluation and are chosen by teachers of the institutions where they study. When faced with this choice, the question is: How to use the textbook in a balanced way? The problem transfers to the teacher the hard decision about the usage of the textbook. The research aims to investigate the beliefs of mathematics teachers in the state public schools of the city of Jataí, in the state of Goiás, regarding the contribution of the didactic book to pedagogical practice. We discuss the need and function of the didactic book in teaching. We list some questions presented by mathematics teachers, from a questionnaire which was answered with the objective of understanding how the didactic book of mathematics is used in schools and the interpretations of teachers who uses it. For us, didactic resources require teachers' knowledge to go beyond it, and critical and reflective positions to make good use of the didactic book of mathematics in teaching. The research is empirical-interpretative, with oral interviews and questionnaires addressed to 14 teachers. It is guided, firstly, by the criteria of the Guide to Selection of the Textbook of the High School of the MEC (2015) in some Brazilian laws: LDB n. 9394/96 (BRAZIL, 1996); the Constitution of the Federal Republic of Brazil, art. 208 (BRAZIL, 1998); Wisner (1987), Libâneo (1994), Bishop & Gofree (1986), apud Ponte et al. (1997) and literature on the selection and use of the textbook: Gérard (1998), Roegiers (1998), and Martinez and Lahore (2006). Preliminary results on usage of textbooks in the classroom show that most of the researched teachers still keep their traditionalist views, using the textbook as the only pedagogical material to be executed. Although some try to work with other resources, they still find difficulties due to the time factor for preparing new teaching materials.

E3: Textbook selection and evaluation

Between the universal contents and the local culture: a didactic and epistemological research on textbooks

Chair: Zuzana Sikorova

Room: C.201C

Time: 10:30-12:30

Tânia Maria Figueiredo Braga Garcia

Universidade Federal do Paraná - NPPD/CNP

Country: Brazil

Since the 1980s the Federal government in Brazil has maintained a National Textbook Program (PNLD), a public policy for the free distribution of textbooks for students in public schools. As a guide to the publishers, the Ministry of Education publishes notices with general and specific criteria for all school subjects. From 1990 on, the evaluation processes have been improved and one of the criteria to have a textbook approved is to approach the diversity of social and cultural experiences. The focus of this research is based on the understanding that textbooks have characteristics and limits arisen due their origins and nature, because they were created as part of a particular schooling form (Vincent, Lahire and Thin 2001) and were produced to teach the same content to several students at the same time. Nowadays, textbooks still have the purpose of reproducing an universal culture to all students, which is the strength of the programmatic function (Choppin 2004) which acts on educational systems and also on the work of publishers. But the textbooks are also supposed to include others cultures, as a requirement of the National Textbook Program, particularly the contents referring to History and to Afro-Brazilian and Indigenous Cultures – groups that should not be treated as homogeneous peoples, considering their recognized ethnic and cultural diversities. This criterion produces a tension between the programmatic function of books in relation to universal contents and the demand to include particular or local experience - theme of a project that has been developed since 2012 at the NPPD/UFPR. The main research question is: How are the tensions between the need to work with universal content and the need to address the diversity of social and cultural experiences being solved in Elementary School textbooks, especially in the case of a country such as Brazil, which is admittedly diverse and unequal? The results were produced based on the analysis of the empirical material, which included: a) The notices and proposals of the Program until 2017; b) Textbooks for Elementary School produced since 2015, randomly selected for analysis, to verify how the authors have dealt with the issue of the diversity of cultural and social experiences. The analysis demonstrated an expansion of didactic and methodological strategies, previously identified in the exploratory study (Garcia 2017) which were categorized as follows: a) The inclusion of that approach embracing the diversity of social and cultural experiences, naively or uncritically; b) The inclusion of contents that approach diverse situations, without omitting or hiding the problems related to differences and inequalities in social life; c) The proposition of activities in which teachers and students have the responsibility to bring elements of culture and local experience to complement the knowledge presented by the authors. The results enable the identification of different ways of minimizing the homogenization originated from the nature of textbooks and their programmatic function.

E4: Sciences - digital textbooks and learning materials

Using Science digital textbooks to achieve deep learning in Japan

Chair: Bruce Knight

Room: C.338

Time: 10:30-12:30

Shuichi Yamashita

Chiba National University

Country: Japan

The Ministry of Education in Japan revises the national curriculum of elementary and secondary schools every ten years. The 2017 Japanese course of study aims to achieve “deep learning,” which emphasizes the development of skills for reflecting, applying distant problems, hypothesizing, relating to principle, applying near problems, etc. (Biggs and Tang, 2011). Japanese law mandates the use of physical textbooks in classrooms. However, the 2019 revision of the law allows partial incorporation of digital textbooks in the curriculum. It is now necessary to achieve “deep learning” through digital textbooks.

To meet this need, the following research questions were addressed through a qualitative and quantitative research design.

1. Is there demand for use of digital textbooks in science lessons?
2. Do the new digital textbook guidelines work for students’ science learning?
3. Are there examples of “deep learning” achieved by using science digital textbooks?

Yamashita et al. (2018) investigated responses from 46 teacher supervisors regarding the demand and potential for digital textbooks in science lessons. Approximately 65% of teachers suggested that the quality of students’ science learning can be improved by using digital textbooks and about 80% reported students’ *motivation* would be increased. These findings suggested that there is demand for use of digital textbooks in science lessons.

In 2018, new digital textbook guidelines were established by the Ministry of Education.

http://www.mext.go.jp/b_menu/shingi/chousa/shotou/139/houkoku/1412207.htm

The guidelines pointed out the following merits of using digital textbooks:

1. Students’ understanding and interest can be deepened and improved.
2. Teachers’ preparation time be reduced.
3. Students’ learning and understanding level can be grasped.

The purpose of this study was to understand the guidelines and provide examples of “deep learning” achieved by using science digital textbooks in Japan.

One of the examples comes from on-site observation and interviews about science lessons using digital textbooks at elementary and secondary schools in Saga Prefecture. The on-site observations and interviews revealed that both digital textbooks and paper textbooks and notebooks were frequently used. In addition, carefully created preparatory video clips could be used prior to class, as in the Takeo flip teaching method, in which students prepare for the science lesson and increase their motivation. In the experiment period, digital textbooks can be used for experiment hypotheses and groups’ result-sharing. In the summary period, the shared results and feedback were used to achieve “deep learning.” In addition, teachers asked students to think about relating to principles, applying near problems, and applying distant problems to achieve “deep learning.”

However, the results indicated a need to carefully consider learning methodologies and contents. The findings also demonstrated a need for academic interventions to support students’ “deep learning.”

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E4: Sciences - digital textbooks and learning materials

The relationship between Physics and Chemistry teachers and textbooks in French high schools

Chair: Bruce Knight

Room: C.338

Time: 10:30-12:30

Pascale Kummer Hannoun

EDA, University of Paris

Country: France

Our research is part of the ReVEA project (Bruillard, 2019), which focuses on French secondary teachers use of resources. In the French educational system, teaching content is framed by the national curriculum, which allows teachers a great deal of “pedagogical freedom” in its implementation. Between the prescribed and produced curriculum, textbooks are a good example of the “potential curriculum” developed by Martinand (2003). Following to this model, in which “teaching practices and teaching quality emerge from the complex interactions between resources, teachers and schools”, (Horsley, 2013), this contribution questions the relationship between physics and chemistry teachers and textbooks in high school.

We have observed that teachers spontaneously declare that they do not use, or use very little, their textbook with students. However, teaching teams continue to choose new textbooks with each reform and either families or regions invest a significant budget to provide each student with a textbook by school subject.

To study the place of textbooks and their use in articulation with other resources, ideally, we should observe teachers’ activity with resources at any time, which is mostly outside the school. However, as this is not easy to access, we have collected hybrid data, using semi-directive interviews with eight teachers and some classroom observations.

Our interview grid concerns in particular:

- Textbook selection modes: what are the conditions under which schools make their selection (When does it take place? Who is involved in the choice? Who are the people or criteria that influence it?);
- Teachers’ evaluation of the student textbook and other textbooks available for the particular level;
- Declared use of textbooks: in what ways are teachers using them when they prepare the sessions or propose activities to their students?
- Motivations reported by teachers, which guide their work with resources.

Classroom observations let us see other selected resources, regardless of their nature and format (like software or material things), and their actual use by teachers or students during the class. Data analyses rely on activity theory (Leontiev, 1984), and lead us to draw teachers’ portraits which, through the motivations teachers express to explain their choice, shed light on the diversity of the activities declared with these traditional resources and testify to the importance of the personal relationship each teacher maintains with his or her own set of resources.

The results first highlight a high autonomy of teachers regarding the student textbook. There is an absence of declared use by students themselves, except for some selected exercises either at home or at school. But if they use various textbooks according to their preferences and level of confidence, teachers never stick strictly to the student textbook or any given textbook. Their choice may be linked to their training or their collective practices. Sometimes, they keep all their old textbooks and build collections.

However, there appears to be a paradox: regarding students’ activities, teachers who claim to maintain a distance from the resources proposed in textbooks use other online resources that are sometimes very similar in terms of student tasks or learning situations.

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E4: Sciences - digital textbooks and learning materials

13-09-2019

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The recent Brazilian academic production about Physics textbooks in national journals

Chair: Bruce Knight

Room: C.338

Time: 10:30-12:30

Thais Ananda dos Santos, Alisson Antonio Martins and Nilson Marcos Dias Garcia

Universidade Federal do Paraná and UTFPR

Country: Brazil

The textbooks have a significant presence in the classrooms of public basic education in Brazil, especially after the universalization of its access through the Brazilian National Program of Textbooks - PNLD, a great Brazilian program that evaluate, select, acquire and distribute textbooks of all subjects for all teachers and students of Brazilian public schools. This massive presence of textbooks in classrooms and the large investment made by the federal government to develop this program justify investigations into their presence in the school environment, investigations that have been in place since the 1980s. However, despite this presence, when the object of study is the textbook of Physics, they have been in smaller numbers when compared to research on other themes of Education. Aiming to identify, quantify and categorize the possible lines of research in the Brazilian academic production, and to better comprehend how they have been developed, a survey of the recent Brazilian academic productions regarding Physics textbooks was performed. In order to do that, searches were performed in eight highly graded Brazilian journals, sorted according to the established criteria of CAPES Qualis (Brazilian Federal Agency for Support and Evaluation of Graduate Education) and selected from journals with the two highest scores on that scale. The survey was done by searching the titles of academic journals using the following keywords for research: Physics Textbooks and Science Textbooks. The publications were on Science Education and Physics Teaching that were available online. Looking for elements that related the researches to Physics textbooks in the paper's title, papers were selected from 2009 to 2017, period which was chosen because Physics Textbooks were only acquired and distributed through the Program in 2009. It was found 65 papers that attended the searching criteria among the 2.542 published papers in the analyzed journals. After reading the selected abstracts and checking if they agreed with the object of study, only 15 of the 65 papers were selected for a deeper analysis, which consisted in a more detailed reading that allowed to classify the selected journals in categories according to the themes addressed by them. Then, from this analysis, it was established eight categories that allowed to classify possible lines of research on Physics textbooks: Constitution of the textbook, Environmental Education, Experimentation, Science History, Paradidactic books, Problem Solving, Imaging Representations and Didactic Transposal. The gathered results also showed that the frequency of published papers is very low, approximately 0.6% of the themes published in the studied period, indicating little investigative expressivity regarding textbooks, even though it is an important element of the teaching-learning process and the public investment in the evaluation, purchase and distribution of these books.

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E4: Sciences - digital textbooks and learning materials

Analysis of statistical curricula in French undergraduate courses

Chair: Bruce Knight

Room: C.338

Time: 10:30-12:30

Mehdi Khaneboubi

University of Cergy-Pontoise

Country: France

As part of the Renoir research program (<https://renoir.uca.fr>), we have initiated research on statistics resources in French university technology degrees (DUT). The DUTs are very popular two-year university courses offered in almost every city in the country. These diplomas are organised into 24 specialties (16 in the industrial sector and 8 in the service sector). For each specialty, curriculum is defined by a national commission in order to guarantee a unity of diplomas regardless of the institution in which the diploma is obtained.

The variety of these courses implies various contexts for which the content taught must be adapted according to: disciplinary sectors, student audiences and core of the profession. Some of the subjects taught are transversal, i.e. included in all specialties. In statistics, the application of elementary, stable and relatively old statistical content in very different contexts provides an opportunity to establish to what extent the selection of apparently immutable formal knowledge is malleable and adaptable to very different professional and educational contexts. What influences and compromises do these curricula reflect?

In order to begin to answer these questions, we propose to analyse each syllabus in the 24 diplomas in a grid. We will show the importance of statistics teaching in these curricula according to their quantity and nature. All the course syllabi are available on the Ministry's website. We have consulted them one by one to produce a table listing the most important elements, i.e. 22 variables:

- name of the diploma, course identifiers and titles;
- semesters, number of hours taught, nature of the courses, coefficient;
- the concepts being taught: measure of central tendency, dispersion, statistical tests, linear regression...

We found that in each diploma there is a redefinition of statistical quantitatively and qualitatively. Statistical knowledge is influenced either from secondary school or directly from disciplinary cultures. Scientific diploma is particularly marked by notions of mathematics where computer instrumentation is secondary while mathematical notions are central. In the service sector diplomas, instrumentation and the use of computers are more important in order to promote the operability of knowledge. To understand these differences, it is necessary to look at the process of curriculum production, made by negotiation between industry, institutions and academia. Two factors allow us to understand the variations of statistics teaching between the diplomas: social reference practices and organizational effects.

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E5: Gender and diversity

13-09-2019

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Theory? What theory? – A critical review of the current (feminist) textbook research from a gender-theoretical perspective

Chair: Dorte Ruge

Room: C.312

Time: 10:30-12:30

Bernhard Fruehwirth

University of Regensburg

Country: Germany

Contemporary feminist textbook research has lost its own theoretical tradition. There is a discrepancy (Dausien, 1999) between the large amount of empirical work of feminist textbook research (criticism) on the one hand and the lack of discussion of the current discourse of feminist theory on the other. This discrepancy has led to the recourse to the (gender-specific) socialization approach as the common explanatory approach, without taking into account the broad critique of it (Bildén & Dausien, 2006). Furthermore, there is – with a few exceptions (Ott, 2017) – a lack of fundamental debate on the (social-)psychological, binary understanding of and about gender commonly applied in feminist textbook research. It can thus be seen that (feminist) textbook research lacks a systematic – and in the sense of a feminist reading (Benhabib, Butler, Cornell, & Fraser, 1993) – critical discourse with its own theoretical tradition.

Based on this diagnosis, my contribution is to identify some of the central problem areas of this discrepancy. Selected findings from women's and gender studies and the few considerations of feminist textbook research (Knudsen, 2005, 2012) serve as the basis for my investigation. The missing integration of the intersectionality concept, a problematization of binary gender understanding, as well as the missing theoretical localization of textbook knowledge as knowledge systems of two sexes, are taken into consideration in this way. This project is a “work in progress” that enables me to give form to my theoretical discomfort and to put it up for critical discussion.

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E5: Gender and diversity

Gender and intercultural identity in ASD (autism spectrum disorder) textbooks and educational media. Are we reproducing attitudes from the past?

Chair: Dorte Ruge

Room: C.312

Time: 10:30-12:30

Marta Esplugues Cebrián

University of Valencia

Country: Spain

This work summarizes the concerns of the GEU publishing organisation in support of special needs and inclusive education materials aimed at individualized learning through its materials, and in particular the possible re-printing of some traditional textbooks to adapt them to more current content regarding gender and intercultural identity. Our purpose is to offer the publisher a report of our investigation and to provide advice on improving their future materials before publication. The research question we asked was whether they are still reproducing stereotypes models from decades ago.

The methodology used in the investigation was qualitative, in line with the critical pedagogy of authors such as Giroux (1996). We created a framework to identify gender and intercultural identity based on work by writers such as Martínez Bonafé (1995) and Parcerisa (1996). Our framework consists of an introduction with information about the material, followed by a more specific section which identifies categories of gender, in which we incorporate concepts including the glass ceiling or sticky floor for women, coeducation etc., taking into account the ideas of Espín López (2003). On the other hand, we also paid special attention to the work of Gimeno Sacristán (1991) about the hidden curriculum: implicit values, prejudices, cultural stereotypes, valuation of social differences: culture, gender and religion.

Using the framework, we reviewed the books, *Enjoying English with Pictograms 1, and 2* activity books by Elisa M^a Albert Bas, which belongs to a new collection of materials printed in 2018 for English students, and which is highly recommended for ASD students. The results show that the books continue to reproduce sexist models without identifying all sexual affective options, with stereotypes in depicting racial differences and non-interracial family models, and lacking representation of mixed marriages. However, a single-parent family and a gay family appear in the material.

After sharing this report with the publisher, GEU began to market an envelope called "*Mi estuche de pictos*": *Todo son familias* (My pencil case of pictograms: All are families) where they give teachers and students the opportunity to use pictograms of different family models depending on their necessity, such as families with two fathers or two mothers, single-parent families, alongside the traditional one. The challenge that they have not yet achieved is to introduce racial differences in these family models. Thus, we should continue our work as researchers to analyse the texts, studying their use in the classrooms in order to determine their impact on the educational market and advising publishers on how they can improve textbooks and educational media to portray multiple, inclusive perspectives.

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E5: Gender and diversity

13-09-2019

Presence of publications related to didactic materials and attention to diversity in SCOPUS, WOS and IARTEM

Chair: Dorte Ruge

Room: C.312

Time: 10:30-12:30

Maria Montserrat Castro Rodríguez

Universidade da Coruña

Country: Spain

Over the last few decades, there has been an incorporation of students with specific educational support needs to schools and ordinary classrooms in many parts of the world. On the other hand, it is increasingly recognized that all students are unique and their educational needs must be met. All this has introduced interesting topics of debate and research in the school, the scientific community and the society with the aim to identify those educational needs to find adequate and effective educational responses so that all students have access to knowledge and learn.

In this context, didactic materials are also focus of interest: uses, functions, dysfunctions, contributions to individual and collective development, responses to the individual and collective needs of an ordinary classroom, etc. As a result of this whole situation, the research presented in this paper has the aim to analyze the articles published in national and international journals whose object of study are the didactic materials in relation to the attention to the diversity of students that attend a ordinary classroom.

In order to answer this objective, we proceeded to carry out a bibliographical search in journals that have published in the last 25 years in the scopus, wos and IARTEM publications (ejournal, paper conference, monographs), reflections or research on the didactic materials in relation to the attention to the student diversity. The reason for the selection of these databases and Iartem is due to its international projection and the diversity of countries that are present in them.

To selection the sample, the filters are keywords and works published the last 25 years, from 1993 until 2018. The keywords are: didactic materials, curricular materials, educational materials, ITC, multimedia, attention to the diversity, inclusive education/ school, especial educational needs, disability, accessibility. When the publications have not keywords or abstract, the indexes were analyzed. Finally, the select sample was: 208, 156 in scopus/wos and 61 in IARTEM.

Overall, there are differences between the databases analyzed and IARTEM publications, in terms of the issues and content they address. In conclusion, the most of the publications, when they introduce the use of materials in relation to the diversity, only focus on students with disabilities, not the use in an ordinary classroom with all the students. To facilitate educational inclusion, it would be interesting for the publications to introduce reference to how to use or the impact of using materials to satisfy the needs of all students. In scopus and wos, by percentage, the publications about the use of teaching materials in order to attention the diversity are not abundant. The differents between IARTEM and scopus/wos are, that, in the first case, the most of articles address attention to interculturality diversity and the both of basedates is in relation to the use of them only with students with special needs. The most IARTEM publications analyze the characteristics of the materials, while in the other two databases, are majority the research results of the implementation of materials.

Poster Presentation

12 September 2019, 13:15-14:30

Poster 1

The impact of visuals from geography textbooks on the children's mental model

Room: FS.102

Time: 13:15-14:30

Petr Trahorsch and Jan D. Bláha
J. E. Purkyně University in Ústí nad Labem
Country: Czechia

Visuals are the important structural component of geography textbooks (Janko & Knecht, 2013). Pupils use visuals for the learning process, which thus influences their mental model (Mayer, 2009). Unfortunately, studies of the impact of geographical visuals on children's conceptions are currently lacking. Our basic research question is therefore: What impact do visuals in geography textbooks have on children's mental model of selected natural phenomena? Based on our previous evaluations of visuals in geography textbooks, high- and low-quality visuals were selected for testing among pupils. A two-tier diagnostic didactic test was used for 136 elementary school pupils, supplemented by interviews with selected pupils. Pupils first completed the pre-test without visuals and then completed a test with diagrams, photos and maps related to selected physical-geographic concepts (e.g. mountain peak, part of a watercourse, etc.) Test items were scored and overall test results were analysed using non-parametric statistical tests.

The results show that the primary factor influencing children's mental model of selected physical-geographic concepts is the initial knowledge of each pupil. This knowledge is very rigid, and visuals do not have a major influence on the model. However, according to test results and interviews with pupils, certain visual elements appear to have negative effects on the mental model (e.g. non-associative colours in visuals, absence of legends on maps, caption style, photos with poor viewing angles).

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Poster 2

Is the gender-specific presentation of STEM professions still an issue in current educational resources? An analysis using the example of Bavarian science textbooks

Room: FS.102

Time: 13:15-14:30

Bernhard Fruehwirth, Michael Heilemann and Heidrun Stoeger

University of Regensburg

Country: Germany

The underrepresentation of women in STEM is an evident phenomenon (Burke & Mattis, 2007). Research shows that gender stereotypes about STEM influence interests, expectations and participation rates of students in STEM (Kerger et al., 2011). Stereotypes are also reproduced in school textbooks. Studies suggest that fewer women than men are represented in STEM professions (Good et al., 2010). However, there are no studies that analyze a larger body of textbooks and that look at differences between school types and science fields.

Our research interest focuses on the following questions: 1) Are more men than women represented in STEM professions in Bavarian science books? 2) Are there differences in the gender distribution a) between different school types and b) between different science fields?

We evaluated a text corpus consisting of 182 science textbooks currently approved for use in Bavarian schools. The analysis is based on computerized text analysis (Tausczik & Pennebaker, 2010) and uses wordlists of STEM professions developed according to the German professional classification (Bundesagentur für Arbeit, 2011).

On average, there are 8.86 male and 0.13 female STEM professions per book, $Z = -10.55$, $p < .001$. Men are most represented in the field of physics ($M = 3.33$, $SD = 5.46$), in stark contrast to women ($M = .06$, $SD = .60$), $Z = -7.42$, $p < .001$. In biology, an occupational field with a comparatively low gender bias, also more men ($M = 1.11$, $SD = 2.51$) are shown than women ($M = .03$, $SD = 0.39$), $Z = -5.01$, $p < .001$. There is no representation of women in mathematics or computer science. Further analyses focus on possible differences between school types.

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Poster 3

Sociology Textbooks and Caribbean Development: What experiences are planned for 6th form students?

Room: FS.102

Time: 13:15-14:30

Jeniffer Mohammed

The University of the West Indies

Country: Trinidad and Tobago

Students in the 6th form in Caribbean countries are the most academically able in the school system. Regional governments and development institutions recognize education as the major force in nurturing the “ideal Caribbean citizen” – one who can effectively address the challenges confronting small, postcolonial societies. In turn, the Caribbean Examinations Council (CXC), the regional examining body, reflects such concerns in its syllabuses. This focus on youth development is intriguing to the researcher, especially in the 6th form (an elitist British legacy), associated with the transmission of complex, disciplinary matter, a basis for entry into tertiary education, and from there onward to prestigious careers. Five sociology textbooks in use in schools, written by Caribbean authors, were examined to explore how they treat the mandate of developing this “ideal Caribbean citizen”. The theoretical framework is informed by the human development paradigm (HDP), a major philosophical orientation undergirding educational policy in the region. Education policy papers, CXC curriculum documents, in general, and the sociology syllabus, in particular, were examined to explore how such tenets may be reflected. A set of assumptions were then generated about the “ideal” Caribbean citizen. These assumptions were organized into a checklist, applied to each sociology text, with the potential of revealing the extent to which authors incorporate ideas about nurturing citizens who are more environmentally-aware, reflective, reflexive, critical of social injustice, conscious of their postcolonial reality, and more open to advocacy. Findings show the continued dominance of cognitive and intellectual content, though there are attempts to motivate and inspire students through activities. The study illustrates the varied ways in which textbook authors grapple with conveying discipline-specific knowledge, and at the same time respond to development mandates that speak to educating students *through* a subject, rather than *in* a subject.

Poster 4

The Colonial Past in French and German History Textbooks at the End of the Eighties

Room: FS.102

Time: 13:15-14:30

Gildas Riant

Université Sorbonne Nouvelle

Country: France

The Colonial Past in French and German History Textbooks at the End of the Eighties

The Historical scholarship about colonisation has been renewed. Collective representations of this colonial past are also subject of public debate in European societies transformed by migrations. Those trends in historiography, along with collective memory, have consequences for history textbooks.

This study of the situation at the end of the eighties in French and German textbooks is the first step in a research for a doctoral thesis in German Studies with a larger framework (chronological and geographical) about colonisation in French, German and Austrian history textbooks from the end of the eighties on. The comparatist approach allows overcoming national problematics.

This study analyses the discourse produced by those textbooks with a quantitative and qualitative method, according a special attention to the iconography. The goal is to assess the extent to which the treatment of colonisation in a given country is correlated with its colonial past: (a) if that subject has more importance in a country with a long colonial history like France, (b) if the narrative has a national(ist) or a European perspective.

The selected corpus is comprised of twenty textbooks for the first level of secondary education. The French corpus includes seven textbooks, one for each publisher. The German corpus includes a selection of twelve textbooks with regional or supraregional diffusion from seven publishers. This German corpus has been completed with the official textbook of the German Democratic Republic. The hypothesis was that there existed an important difference between France and Germany, but the preliminary analysis shows that the treatment of the subject is only partially correlated with each country's colonial history: colonisation occupies approximately the same place, and the narrative alternates European and national perspectives, even in the Federal Republic of Germany.

Poster 5

To teach controversial issues in history – The impact of learning materials

Room: FS.102

Time: 13:15-14:30

Hildegunn Juulsgaard Johannesen
University of Southern Denmark
Country: Denmark

To "dispute the right to the past" is an issue of increasingly awareness in current research. What is disputed in the interpretations of historical events is squeezed by new questions and beliefs about and use of the past. The history teacher is required to be aware of these layers of disagreement, and the controversy is evident in the teaching. (Hodgkin, 2003)

International research into controversial issues is concerned with the definition of a controversial topic as well as teachers' professionalism and pedagogical handling thereof. Less elucidated are controversial issues in history lessons, which seem absent in a history-didactical context in Denmark. (Bertucio, 2016; Kello, 2016; Yacek, 2018)

This Ph.D. project contributes to knowledge of controversial issues in history teaching, with the aim of qualifying history as an interpretative and problem-oriented subject. It investigates what characterizes controversial issues in history teaching through a qualitative analysis based on the teaching of three teachers in the upper classes of public school through the following research questions:

- What role do controversial issues play in history teaching?
- What appears to be controversial for teachers?
- To which degree and at what level do controversial issues appear in teachers' practice?

My empirical data is based on interviews and observations, emphasizing history teachers' didactic considerations and how these translate in the classroom. LearningDesignSequences is used as a methodical framework for the data analysis (Selander, 2017). In particular, teachers' choice of learning materials, how the learning materials present and characterize controversial issues in the past, and teachers' use of learning materials will be part of the analysis and the aim for the discussions to be promoted by the poster session.

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Poster 6

From analog to digital games by pupil creation

Room: FS.102

Time: 13:15-14:30

Dorte Ruge

UCL University College

Country: Denmark

The aim of this poster was to present results from qualitative case study on how pupils in a primary school project developed knowledge, skills and ownership while they engaged in creation of multimodal and digital learning materials in the form of “games”. The project was conducted in a public school with strong competences on how to apply and integrate digital learning methods in food- and health education (Ruge 2016). Filstedvejens School had a mixed demographic profile and was situated in Aalborg municipality in Denmark. The project was funded by the Danish Ministry of Education from 2018-2019. A professional software company had previously developed the basic framework with the special affordance that provided primary pupils with the opportunity to develop their own games within the basic framework. Teachers attended six workshops during the project period, where they learned about the development of games and how to teach pupils to create content in simple games. The poster will present examples of the multimodal educational materials and results from research in pupils’ development and teachers' innovative and project-oriented collaboration.

Poster 7

The development of didactic materials for teaching languages for university life

Room: FS.102

Time: 13:15-14:30

Fernanda Silva Veloso and Flávio Oliveira Medina

Universidade Federal do Paraná - UFPR

Country: Brazil

This research is directly linked to the extension project called “Language Teaching for University Life”, from the Federal University of Parana. This project offers foreign language courses (Spanish, Italian, English, German and Japanese) to the university students. These courses are divided into four modules and the classes are prepared by a team composed of students in teacher training and professors, who develop and discuss them through presential and virtual meetings. One of the goals of the project is to articulate extension with language teaching and learning, promoting a pedagogically better development for undergraduate students during their teacher training of languages, through the authorial production, use and evaluation of all teaching materials projected specifically to the target public. The preparation of such material, which is the focus of this presentation, requires systematic work in the selection, adaptation, creation, discussion, organization of texts and activities which will later compose the didactic unities (DU). Our choices are theoretically supported by our experience in Teaching Languages for Academic Purposes, which permeates the development of the teaching units that have been used in the course modules. In order to prepare the classes, some of such theoretical basis are discussed in the beginning of each semester. Among them, we highlight those belonging to the sociointeracionism framework, a teaching approach adopted in all our extension courses. Working with authentic text is also mandatory to the students in teacher training, which is why the “concrete enunciation” (as discussed by the Bakhtin Circle) is one of the concepts that permeate all units. The DUs discussed in this presentation had as starting point the social practices that an undergraduate student would go through in the context of an interchange, such as choosing a university, which requires not only linguistic knowledge, but also the knowledge of how foreign university systems work.