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Finnish biology teachers' perception and use of content representation (CoRe)

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NOFA9

**Education, knowledge
and Bildung in a global world**

May 9–11, 2023 in Vaasa, Finland

Book of Abstracts



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Pupils' voices of craft as an activity for a more sustainable world

Eva Ahlskog-Björkman, Mia Porko-Hudd & Marie Debora Koch, Åbo Akademi University, Finland

The Nordic countries' curricula for basic education emphasize sustainable development (Folketinget, 2019; Skolverket, 2019; Utdanningsstyrelsen, 2014; Utdanningsdirektoratet, 2019). This entails a need to understand how to integrate sustainable development within the subject of craft. Research within the Nordic network SELAS, Sloyd Education, Learning And Sustainability, has previously investigated teacher educators' views on sustainable development in craft teaching (Ahlskog-Björkman et al., 2020), as well as craft teacher students' understanding of the social dimension of craft when sustainable development is a fundamental element (Koch et al., 2021).

In this study, we want to expand on this research and highlight pupils' voices for how they, through craft activities and sustainability goals, can contribute to a more sustainable world. Based on sustainability thinking, craft education can be broadened to make room for both local and global perspectives. The research question is *What do pupils express about their crafting in relation to sustainability?*

Seventy pupils from grades 3, 4, 7 and 8, i.e., children ages 9–15, at a Finland-Swedish school participated in the survey. The theme in craft education was sustainable development in interaction with textile techniques. Data collection was carried out with the help of a Padlet where, towards the end of the education sequence consisting of four to five weeks, the pupils were asked to take a picture of their craftwork, present it, and tell about how they have considered sustainable development in their work. The pupils' own formulations in the form of artifacts, text and images constitute the main data material. Participation in the study was voluntary.

The study is based on sloyd educational theory in a sociocultural perspective. The analysis is carried out in a hermeneutic tradition. The expected results consist of examples of how pupils express themselves verbally and materially about crafts and sustainable development.

Keywords: Education, Sloyd science, Sustainability, Craft

References

- Ahlskog-Björkman, E., Porko-Hudd, M., Koch, M., Westerlund, S., & Carlsen, K. (2020). Nordiska slöjdpedagogers syn på hållbar utveckling som innehåll i slöjdundervisningen. *Techne Series – Research in Sloyd Education and Craft Science A*, 27(2), 64–80. <https://journals.oslomet.no/index.php/techneA/article/view/3771>
- Folketinget. (2019). Bæredygtighed skal skrives ind i folkeskolens formålsparagraf (§1. stk. 3) på linje med åndsfrihed, ligeværd og demokrati. <https://www.borgerforslag.dk/se-og-stoet-forslag/?Id=FT-02065>.
- Koch, M. D., & Ahlskog-Björkman, E. (2021). Social magi i håndværksfagene. *Techne Series – Research in Sloyd Education and Craft Science A*, 28(4), 179–192. <https://doi.org/10.7577/TechneA.4735>
- Skolverket. (2019). *Läroplan för grundskolan, förskoleklassen och fritidshemmet 2011. Reviderad 2018*. DanagårdLitho.

Utbildningsstyrelsen. (2014). *Grunderna för läroplanen för den grundläggande utbildningen 2014*.
https://www.oph.fi/download/166434_grunderna_for_laroplanen_verkojulkaisu.pdf

Utdanningsdirektoratet. (2019). Overordnet del –verdier og prinsipper for grunnopplæringen.
<https://www.udir.no/lk20/overordnet-del/>

Entrepreneurship Education Curriculum Development in Higher Education

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According to the International Labour Organization (ILO, 2020), there are around 5.6 million unemployed young graduates across Europe. With the current economy shift, policy makers and educators agree on the essential evaluation of Entrepreneurship Education (EE) curricula to ensure the program's effectiveness in handling the concurrent economy challenges and inflation. The EE curricula is expected to foster entrepreneurial mindsets, provide graduates with entrepreneur skills for employability and attitudes that support generation of ideas for business start-ups, growth and innovation. This doctoral thesis will use the Non-Affirmative Theory (NAT) as an evaluation tool for EE curricula development. The theory is able to draw ontological core concepts of modern education that can demonstrate curriculum development framework strengths, didactic, and educational leadership as different stakeholders, educational leaders and teachers in higher education negotiate the EE curricula.

During the paper presentation, an outline of the first article in the thesis will be a systematic literature review, in which the initial findings of the research questions will address: 1) What are the known approaches and processes when developing EE curricula in higher education? 2) Which curricula models are chosen when developing EE in higher education? The expected findings will offer a constructive report, highlighting the effective strategies in policy making that can guide different countries for the purpose of reviewing and developing effective Entrepreneurship Curriculum Development processes.

Keywords: Entrepreneurship Education, Non-Affirmative Theory, Higher Education, Unemployment

References

- Al-Lawati, E. H., Kohar, U. H. A., & Suleiman, E. S. Bin. (2021). Entrepreneurship studies in the sultanate of Oman: A scoping review of 20 years publications. *Estudios de Economía Aplicada*, 39(10). <https://doi.org/10.25115/eea.v39i10.5974>
- ILO. (2020). ILO Monitor 2nd edition: COVID-19 and the world of work Updated estimates and analysis. *International Labour Organization*, April. <https://doi.org/10.18356/ba5cc386-en>
- Uljens, M. (2018). Non-affirmative education theory and discursive institutionalism as possibilities for curriculum research: A foreword. *Transnational Curriculum Inquiry*, 15(2), 1–3. [internal-pdf://0336119679/191061-Article Text-214780-1-10-20181121.pdf](https://doi.org/10.1080/15393000.2018.1511211)

But does it work in practice?

A review of effective educational procedures to increase students' intercultural competence through classroom teaching and learning

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Following Sweden's increasingly changing demographic composition, demands for intercultural competence among school staff and students will increase (Lahdenperä, 2018). To meet this transition, schools must proactively adapt to fulfill the needs of all students and teachers. However, there is a lack of in-depth understanding of how teachers can adapt their teaching to accommodate the culturally heterogeneous classroom (Öberg, 2016). In the presentation, I will argue that an intercultural evaluation of International Large Scale Assessments is essential to understand if intercultural proficiency is a prioritized international learning objective.

This presentation will discuss an ongoing comparative study that seeks to identify the distribution of aspects related to intercultural competence in ILSA produced by OECD and IEA. These results estimate how the chosen ILSA content relates to intercultural competence. Subsequently, the study also seeks to specify to what extent the ILSA expresses intercultural competence. To examine the study objective, the following research questions have been formulated: 1. What aspects of intercultural competence are measured in the chosen International Large Scale Assessments? 2. To what extent are the international competence aspects present in the chosen International Large Scale Assessments?

To answer the study's research questions, qualitative text analysis will be supplemented with quantitative content analysis (Müller et al., 2020). At the conference, I will present the results of the intercultural evaluation of the aforementioned large-scale assessments produced by IEA and OECD.

After preliminary reviews of several IEA and OECD reports, the content of ICCS 2009, ICCS 2016, and PISA 2018 relates to the greatest extent to the construct of intercultural competence. The content of ICCS concerns citizenship education, democratic participation, and current social issues, all of which overlap with indicators of intercultural competence (Deardorff, 2006; Bennett, 2009). Hence, I will highlight how ILSA measures intercultural competencies and problematize how aspects of intercultural competencies are backgrounded.

Keywords: Intercultural competence, International Large Scale Assessments, Mixed methods research

References

- Bennett, M. J. (2009). Defining, measuring, and facilitating intercultural learning: a conceptual introduction to the Intercultural Education double supplement. *Intercultural Education*, 20(sup1), S1–S13. <https://doi.org/10.1080/14675980903370763>
- Deardorff, D. K. (2006). Identification and Assessment of Intercultural Competence as a Student Outcome of Internationalization. *Journal of Studies in International Education*, 10(3), 241–266. <https://doi.org/10.1177/1028315306287002>

- Lahdenperä, P. (2018). *Interkulturalitet i undervisning och skolutveckling*. Skolverket. URL:
[https://www.skolverket.se/download/18.645f1c0e17821f1d15c2dfd/1622624237448/Interkulturalitet i undervisning och skolutveckling Pirjo Lahdenpera 201 81 003-2.pdf](https://www.skolverket.se/download/18.645f1c0e17821f1d15c2dfd/1622624237448/Interkulturalitet_i_undervisning_och_skolutveckling_Pirjo_Lahdenpera_201_81_003-2.pdf)
- Müller, F., Denk, A., Lubaway, E., Sälzer, C., Kozina, A., Perše, T. V., Rasmusson, M., Jugović, I., Nielsen, B. L., Rozman, M., Ojsteršek, A., & Jurko, S. (2020). Assessing social, emotional, and intercultural competences of students and school staff: A systematic literature review. *Educational Research Review*, 29, 100304. <https://doi.org/10.1016/j.edurev.2019.100304>
- Öberg, J. (2016). *Samhällskunskapens dimensioner: Tio lärare ramar in sitt ämne*. [Licentiatavhandling.] Jönköping: Högskolan i Jönköping.

“Menneske uten land”- an interdisciplinary project about refugees between the school subjects Social studies and Norwegian – On how to create engagement for interdisciplinary work on migration through exploratory conversation and reading

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Our project is designed to address key aspects of the new curriculum in Norway (LK20) such as interdisciplinarity, sustainability, citizenship, and critical thinking. It has been piloted in several iterations in cooperation with two upper secondary schools since 2020/21, with a new implementation of the project to take place in the spring of 2023. The project is part of ULF – explorative forms of learning in the University-School cooperation USSIT.

We build our project on philosophical conversation as a didactical tool in relation to migration as a topic (Olsholt & Schjelderup, 2021). We also investigate how reading and working with different texts can support the students' commitment and understanding of migration as a central key problem of our time (Klafki, 2014).

Our empirical data consists of surveys, student reflection logs and classroom observations. Tentative findings suggests that the students had little knowledge about migration and refugees beforehand. Reading different texts and partaking in philosophical conversations helped the students gain a deeper understanding of migration issues through the development of their exploratory skills.

The theoretical framework is based on Bildung as a central concept through the lens of critical-constructive Didaktik (Klafki, 2014; Ryen, 2020), philosophical conversation (Olsholt & Schjelderup, 2021) and global-citizenship education (Andreotti, 2017). In addition, we will investigate Norwegian academic perspectives on literary conversations, and the text as both a problem and a source for critical reading (Samoilow & Myren-Svelstad, 2020).

Keywords: Migration, Interdisciplinarity, Critical thinking, Literacy, Global-citizenship education

References

- Andreotti, V. (2006). *Soft versus critical global citizenship education. Policy and Practice. A development education review* (3). Retrieved from <https://www.developmenteeducationreview.com/issue/issue-3/soft-versus-critical-global-citizenship-education>
- Klafki, W. (2014). *Dannelsesteori og didaktikk: Nye studier* (2nd ed.). Forlaget Klim.
- Olsholt, Ø., & Schjelderup, A. B. (2021). *Filosofi og etikk i skolen*. Fagbokforlaget.
- Ryen, E. (2020). Klafki's critical-constructive Didaktik and the epistemology of critical thinking. *Journal of Curriculum Studies*, 52(2), 214–229. doi:10.1080/00220272.2019.1657959
- Samoilow, T. K., & Myren-Svelstad, P. E. (2020). *Kritisk teori i litteraturundervisningen*. Fagbokforlaget.

Aesthetic experience in technology education – the role of aesthetics for learning and meaning-making in robotic programming in lower secondary school

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This study focuses on the aesthetic dimensions of the learning of technology; taking the stance that the doing of technology – in and out of schools – is inseparable from aesthetic experiences. In technology education, aesthetics has been emphasized as foundational to design and appreciation of aesthetical qualities in technological artifacts (de Vries, 2016). Research has however primarily attended to aesthetics in technology education in terms of student attitudes toward different aspects of the technology subject (Potvin & Hasni, 2014). Only rarely have attitudes and identity work been contextualized as situated and so describing aesthetic experiences as constituted in classroom action. What role aesthetics has for student learning in technology class is thus little investigated.

The aim of the study is therefore to explore the role of aesthetics in learning technology. The data for the study comes from two Swedish lower secondary technology classrooms. Participating students (ages 15–16) were pair-programming robots that should perform specified movements, aesthetic experiences were thus not related to exterior design features but more to the learning processes of designing functional code. Every group screen recorded while they were coding, which resulted in films showing how the program emerged. This programming activity and associated student talk constitute the data of the study. The transcribed films were analyzed using Practical Epistemological Analysis (Wickman & Östman, 2002).

Findings show that aesthetics contribute to student learning in several ways. For example, aesthetic judgments were used by the students and their teacher for evaluating distinctions on ways to proceed and so orienting learning towards the purpose of the activity. The students and their teacher negotiated and aesthetically evaluated norms concerning what constitutes functional code, but also ways-to-be in the programming activity. The aesthetic language thus played an important part in how the students positioned themselves as programmers or as non-programmers.

Keywords: Technology education, Aesthetics, Lower secondary school

References

- Potvin, P., & Hasni, A. (2014). Interest, motivation and attitude towards science and technology at K-12 levels: a systematic review of 12 years of educational research. *Studies in Science Education*, 50(1), 85–129.
- Vries, M.J. de (2016). *Teaching about Technology. An Introduction to the Philosophy of Technology for Non-philosophers* (2nd ed.). Springer International Publishing.
- Wickman, P.-O., & Östman, L. (2002). Learning as discourse change: A sociocultural mechanism. *Science Education*, 86, 601–623.

Awareness of linguistic diversity, linguaculture and the role of language in society

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In a world of increasing globalisation, multiculturalism and multilingualism, essential components of education for global citizenship must include intercultural competence and language awareness (Boye & Byram, 2018; James & Garrett, 1992), especially in the form of awareness of and reflection upon linguistic diversity, linguaculture (Risager, 2006) and the role of language in society. This presentation explores these questions through qualitative analyses of classroom and interview data collected in a plurilingual setting in a Danish 9th grade classroom in the context of the research project Plurilingual Education (funded by the Danish Research Council grant no. 0132-00208B; PI: Petra Daryai-Hansen), which has an overall focus on manifestations of metalinguistic, practical and critical language awareness across educational levels (Daryai-Hansen, in progress). As one subproject of this larger research project, plurilingual cross-disciplinary project weeks for 9th grade were developed in collaboration with subject teachers of Danish, English, German and French. These project weeks were documented through field notes, audio recordings, student interviews and collection of student work, contributing to an extensive set of qualitative data (Krogager Andersen & Daugaard, submitted).

In this study, I focus specifically on data from teaching activities relating to linguistic diversity, linguaculture and the role of language in society, analyzing how students' engagement with these topics influences the ways in which language awareness is manifested. Departing from the notions of metalinguistic, practical and critical language awareness as defined in Daryai-Hansen et al. (in progress), I will present examples of students' language-aware forms of engagement with the topics in question and discuss how such forms of engagement may contribute to intercultural competence, the formation of a sense of global citizenship and multilingual identity. Finally, I will point out perspectives for the integration of intercultural competence and language awareness aspects in the promotion of global citizenship across school subjects.

Keywords: Language awareness, Linguistic diversity, Plurilingual teaching, Intercultural competence

References

- Boye, S., & Byram, M. (2018). Language Awareness and the Acquisition of Intercultural Communicative Competence. In P. Garrett & J. M. Cots (Eds.), *The Routledge Handbook of Language Awareness* (pp. 435–449). Routledge.
- Daryai-Hansen, P., Drachmann, N., & Krogager Andersen, L. K. (in progress). Rethinking Language Awareness in the Context of Plurilingual Education – a Study across Educational Levels in Denmark.
- James, C., & Garrett, P. (1992). *Language awareness in the classroom*. Longman.
- Krogager Andersen, L., & Daugaard, L. M. (submitted). "They rolling R". Language awareness and emergent Danish in the multilingual lower secondary classroom.
- Risager, K. (2006). Culture in Language: A Transnational View. In H. Leth Andersen, K. Lund, & K. Risager (Eds.), *Culture in Language Learning* (pp. 27–44). Aarhus University Press.

Drawing to learn and learning to draw: Challenges and opportunities of combining drawing and science goals in primary school classrooms

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Drawing is a common element in subject teaching in many primary school classrooms, not least in science class. This is promising, since drawing may support students' science learning for example when it comes to communicating and organising knowledge (Ainsworth et al., 2001). However, studies of how drawing activities are carried out in primary school science classrooms indicate that teachers rarely make explicit use of drawing for science learning purposes (Areljung et al., 2021; Wilson & Bradbury, 2016).

Here, we present findings from a project where drawing activities were an integral part of science teaching. We carried out the project in two teams, each including two or three teachers (school year 1–3), two or three researchers, and one arts educator. The teams planned lessons, which teachers then implemented in their classrooms with researchers present. Altogether we recorded video data from 31 lessons. The current presentation explores opportunities and challenges of combining drawing and science goals in the classroom. We base the presentation on two analyses. The first analysis focused on how teachers support students' drawing in the classroom. The second analysis focused on how student pairs negotiate when they face the task to co-draw their understanding of a science phenomenon. In both cases, we examined teachers' and students' multimodal communication (speech, body language and drawing).

For teachers, it seems productive to combine drawing and science goals when they approach drawing as a part of science inquiry, that is, when drawing is related to observation and documentation. However, it seems challenging for teachers to simultaneously teach drawing and science explanations, and in such cases science goals overtrump drawing goals. For students on the other hand, it seems that drawing overtrumps science, since they primarily discussed drawing as such and not how to understand the science phenomenon they were drawing.

Keywords: Science education, Drawing, Primary school

References

- Ainsworth, S., Prain, V., & Tytler, R. (2011). Drawing to learn in science. *Science*, 333(6046), 1096–1097. <https://doi.org/10.1126/science.1204153>
- Areljung, S., Due, K., Ottander, C., Skoog, M., & Sundberg, B. (2021). Why and how teachers make use of drawing activities in early childhood science education. *International Journal of Science Education*, 43(13), 2127–2147. <https://doi.org/10.1080/09500693.2021.1953186>
- Wilson, R. E., & Bradbury, L. U. (2016). The pedagogical potential of drawing and writing in a primary science multimodal unit. *International Journal of Science Education*, 38(17), 2621–2641. <https://doi.org/10.1080/09500693.2016.1255369>

Performing knowledge: Cultivating a teacher educator identity through collective, exploratory, and exemplary teaching practices

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This paper addresses two central concerns in Norwegian teacher education: Firstly, teacher students in Norway report a gap between theory and practice (Høgheim & Jenssen, 2022). Secondly, teacher educators identify only to a varying extent as teacher educators (Høydalsvik, 2019; Ulvik & Smith, 2016, 2018). Our hypothesis is that these concerns are interrelated, and that a strengthening of the educators' professional identity as teacher educators may enable them to perform exemplary, practice-oriented teaching and foster an increased capacity for meta-reflection in teacher students.

The present paper derives from an ongoing design-based research project on exploration and unpredictability in teacher education. More specifically, it draws on experiences from the planning and implementation of a master-level course related to L1 teaching at primary school level.

The research project's initial aim was threefold: to ensure student activity, to socialise students into a subject-related discourse, and to provide exemplary teaching as a basis for meta-reflection among teacher students. The teacher educators implemented a flipped classroom structure (inspired by e.g., Stenseth, 2021), where dialogue-based podcasts were used to exemplify how to "talk theoretically". Exploratory assignments were designed to make the students cooperate while using and developing subject-based skills and knowledge.

Initial results from student evaluations show that the students experienced a smaller gap between theory and practice in the master-level course than in previous courses. The educators report that the process of designing the course and the collaboration involved in making the podcasts have had an impact on their identity as teacher educators. Moreover, the collaborative process has promoted among these educators a feeling of acting within a teacher collective. Finally, it has enabled these teachers to facilitate conversations in class that spur students' meta-reflection by combining and developing their pedagogical knowledge and deep understanding of the subject matter.

Keywords: Exemplary teaching, L1 teacher education, Teacher educator identity

References

- Høgheim, S., & Jenssen, E. S. (2022). Femårig grunnskolelærerutdanning – slik studentene beskriver den. *Uniped*, 45(1), 5–15. <https://doi.org/10.18261/uniped.45.1.2> Internt NLA
- Høydalsvik, T. E. L. (2019). The hidden professionals? An interview study of higher education-based teacher educators' professional identity. *Norsk tidsskrift for utdanning og praksis*, 13(2), 93–113. <https://doi.org/10.23865/up.v13.1974>
- Stenseth, T. (2021). Hvordan fremme studentaktivitet og engasjement for læring? En designbasert studie av omvendt undervisning og videorefleksjoner i lærerutdanningen. *Acta Didactica Norden*, 15(3), article 1. <https://doi.org/10.5617/adno.8313>

Ulvik, M., & Smith, K. (2016). Å undervise om å undervise. Lærerutdanneres kompetanse sett fra deres eget og fra lærerstudenters perspektiv. *Uniped*, 39(1), 61–77. <https://doi.org/10.18261/issn.1893-8981-2016-01-06>

Ulvik, M., & Smith, K. (2018). Lærerutdanneres profesjonelle utvikling. *Uniped*, 41(4), 425–440. <https://doi.org/10.18261/issn.1893-8981-2018-04-05>

Language teaching in Finland-Swedish schools – from the teachers’ perspectives

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The national core curriculum in Finland builds on a communicative and action-oriented view of language education, where active, versatile language use and meaningful interaction constitute important prerequisites for language learning (cf. Bardel, 2019; Council of Europe, 2001). In the process whereby the guidelines stipulated in the curriculum are transferred into practice, teachers have a central role in interpreting these and arranging instruction so that the content and methods used meet pupils’ previous experiences and needs in a meaningful learning process (Uljen & Ylimäki, 2017).

The current study is the starting point of the project *Kalejdospråk 2023–2025* that aims to develop models for an inclusive and holistic language education for all. In this study, we explore what language teaching practices currently look like in basic education within a Finland-Swedish context. What do teachers consider important when it comes to language education and what challenges are they currently facing? The study is based on a survey that was sent out in September 2022 to all schools providing basic education in Swedish (approximately 200 schools). The survey included both closed (multiple choice) and open-ended questions and 130 teachers (class teachers and language teachers) involved in language teaching answered. Above all, the teachers considered it important that pupils are encouraged to use the target language and that everyone has the opportunity to develop their linguistic skills, regardless of proficiency level. At the same time, the results highlight challenges when it comes to creating a supportive and inspiring learning environment, seeing that learners’ proficiency levels, interests and prerequisites are so varied and resources lacking.

Keywords: Language teaching, Basic education, Teachers’ perspectives

References

- Bardel, C. (2019). *Kommunikativ språkundervisning och en handlingsorienterad språksyn*. <https://larportalen.skolverket.se>
- Council of Europe. (2001). *Common European Framework of reference for languages: Learning, teaching, assessment*. Cambridge University press.
- Uljen, M., & Ylimäki, R. (2017). *Bridging educational leadership, curriculum theory and Didaktik: Non-affirmative theory of education*. Springer Open.

Philosophy as Bildung-promoting Teaching in the Norwegian National Curriculum

Pedro Vincent Dias Bergheim, University of Bergen, Norway

This paper presentation is about philosophy teaching and the concept of Bildung (danning/dannelse) in the Norwegian national curriculum.

The latest curriculum reforms in Norway have made descriptions of Bildung gradually more competence-oriented (Hilt & Riese, 2021), thus reflecting the global turn from content-oriented to competence-oriented curriculum-making (Sundby & Karseth, 2022). Meanwhile, philosophy teaching is present across multiple school subjects in Norway and is spoken of both as a field of knowledge with its own transmissible content (e.g., ontology, epistemology and ethics) and as a transdisciplinary teaching method with no content of its own (St.meld. nr. 30, 2003-2004). It is therefore of interest to shed light on how the concept of Bildung and the teaching of philosophy are discursively constructed in the Norwegian national curriculum, and what their points of convergence are.

To answer these questions, I will employ Laclau and Mouffe's discourse theory (2001) as a framework for a pattern-based discourse analysis (Clarke & Braun, 2013). The documents to be analysed are the Norwegian core curriculum and the subject curriculum of 'History and Philosophy', 'Religion and Ethics' and 'Knowledge of Christianity, Religion and Ethics Education'. The analysis will focus on the points of convergence between discourses on Bildung and the teaching of philosophy and aims at making explicit how the latter is to promote the former.

So far, the dataset seems to suggest that the hegemonic conception of Bildung in the national curriculum lays emphasis on philosophy as a transdisciplinary teaching method and less so on philosophy as a transmissible field of knowledge. A discussion will be held on what consequences these findings may have for teachers' implementation of Bildung-promoting philosophy teaching in their own classrooms.

Keywords: Bildung, Curriculum, Philosophy teaching

References

- Braun, V., & Clarke, V. (2013). *Successful qualitative research: A practical guide for beginners*. SAGE.
- Hilt, L., & Riese, H. (2021). Hybrid forms of education in Norway: A systems theoretical approach to understanding curriculum change. *Journal of Curriculum Studies*, 1–20.
<https://doi.org/10.1080/00220272.2021.1956596>
- Laclau, E., & Mouffe, C. (2001). *Hegemony and socialist strategy: Towards a radical democratic politics* (2nd ed). Verso.
- Meld. St. 25 (2016–2017) — Humaniora i Norge. Kunnskapsdepartementet.
<https://www.regjeringen.no/no/dokumenter/meld.-st.-25-20162017/id2545646>
- St.meld. Nr. 30 (2003-2004) — Kultur for læring. Utdannings- og forskningsdepartementet.
<https://www.regjeringen.no/no/dokumenter/stmeld-nr030-2003-2004-/id404433/>
- Sundby, A. H., & Karseth, B. (2022). 'The knowledge question' in the Norwegian curriculum. *The Curriculum Journal*, 33(3), 427–442. <https://doi.org/10.1002/curj.139>

What can democracy mean in the teaching and learning of mathematical sciences?

Kim Berts, Mats Braskén & Ann-Sofi Härmälä-Braskén, Ann-Sofi Røj-Lindberg

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The basis for the presentation is our concern for the current health of democracy in society. We agree with Webster (2022) that democracy is an educational project that every educator on all levels of schooling should fight for, especially in these times of war in Europe. In our view, it is important that educators support students into becoming independent actors who actively contribute to the shaping of society and are ready for participation in democratic decision making (cf. Biesta, 2016).

The inextricable connection between democratic values such as justice, equality, respect for life and human rights, and education was acknowledged already by Dewey and since then by many others (e.g., Biesta, 2016; Klette et al., 2018), and by those involved in writing the current Finnish national core curriculum for basic education (FNBE, 2016). Dewey saw democracy as a way of life and reminded us that in successful democracies, individuals can think for themselves, judge independently, and recognize trustworthy information. The Finnish national core curriculum expects educators to implement activities that support the students' growth as human beings who strive for truth, goodness, beauty, justice, and peace, as well as to develop individuals and communities capable of making decisions based on ethical reflections, putting themselves in the place of another person, and considerations based on knowledge.

In our presentation, we will account for the problems of the current knowledge building and social processes within the teaching and learning of mathematical sciences. While these subjects do provide skills and knowledge that are necessary for active contributions to democratic processes in society, we argue that democratic competencies would be furthered in classroom cultures that gain momentum from dialogue and open-ended problems.

Keywords: Mathematical sciences, Democracy, Dialogic teaching, Learning as participation

References

- Biesta, G. (2016). *Good education in an age of measurement: Ethics, politics, democracy*. Routledge.
- Boaler, J., & Selling, S. K. (2017). Psychological imprisonment or intellectual freedom? A longitudinal study of contrasting school mathematics approaches and their impact on adults' lives. *Journal for Research in Mathematics Education*, 48(1), 78–105.
- Finnish National Board of Education. (2016). *National core curriculum for basic education 2014*. Publications 2016:5.
- Klette, K., Sahlström, F., Blikstad-Balas, M., Luoto, J., Tanner, M., Tengberg, M., Roe, A., & Slotte, A. (2018). Justice through participation: student engagement in Nordic classrooms. *Education Inquiry*, 9(1), 57–77.
- Webster, R. S. (2022). *Caring confrontations for education and democracy*. Routledge.

Spannungsfelder: Emotions, Beliefs and Practices when Teaching German L3 Grammar to Young Beginners in Sweden

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Teaching beginner-level German as a foreign language in a lower secondary school context can be a challenging undertaking, given the reputation of German as a subject with a complex grammar system (Diehl, 1999) and the many careful considerations that teachers must give the lesson design. In a Swedish context, little classroom-based intervention research has been done on the teaching of foreign languages other than English. Grammar teaching remains a specifically under-researched area and is therefore at the heart of the classroom research project Spannungsfelder (fields of tension).

To investigate how a teaching unit on syntax in German L3 can be designed and carried out in year 7, this research project combines interviews, lesson observations, post-tests and student questionnaires. Four teachers of German in a Swedish lower secondary school context were studied as they designed and carried out a lesson cycle on the inverted verb order (V2) as a predefined teaching object. A qualitative content analysis of individual interviews and observational notes from the designed lessons shows that teachers have powerful pedagogical emotions (Sheppard & Levy, 2019) about grammar teaching and that these emotions play an important role and shape their pedagogical practice.

Furthermore, the results suggest that teacher emotions about grammar teaching interact with contextual factors surrounding the L3 classroom (Erickson et al., 2022) and teachers' cognitions and held beliefs about language teaching (Basturkmen, 2012; Borg, 2006). A central theme that arises is, for example, that teachers are passionate about teaching grammar but that, due to held beliefs about contextual factors, they tend to get apprehensive about the matter and therefore modify their teaching in a way that is not always in line with their emotions and held beliefs about efficient language teaching.

Keywords: German L3, Grammar teaching, Teacher emotions

References

- Basturkmen, H. (2012). Review of Research into the Correspondence between Language Teachers' Stated Beliefs and Practices. *System: An International Journal of Educational Technology and Applied Linguistics*, 40(2), 282–295. <https://doi.org/10.1016/j.system.2012.05.001>
- Borg, S. (2006). *Teacher Cognition and Language Education: Research and Practice*. Continuum.
- Diehl, E. (1999). Schulischer Grammatikerwerb unter der Lupe: Das Genfer DiGS-Projekt. *Bulletin Suisse de Linguistique Appliquée*, 1999(70), 7–26.
- Erickson, G., Bardel, C., Österberg, R., & Rosén, M. (2022). Attitudes and ambiguities – teachers' views on second foreign language education in Swedish compulsory school. In C. Bardel, C. Hedman, K. Rejman, & E. Zetterholm (Eds.), *Exploring Language Education* (Vol. 2, pp. 157–224). Stockholm University Press. <https://www.jstor.org/stable/j.ctv2x6f02h.8>
- Sheppard, M., & Levy, S. A. (2019). Emotions and teacher decision-making: An analysis of social studies teachers' perspectives. *Teaching and Teacher Education*, 77, 193–203. <https://doi.org/10.1016/j.tate.2018.09.010>

Learner-centered grammar teaching for the challenges of the future

Helga Birgisdóttir & Hanna Óladóttir, University of Iceland

This paper introduces a new ideology in grammar teaching and presents the results of research on teaching grammar at an Icelandic secondary school, where the ideology was purposefully applied for the first time.

The grammar that is dominant in the Icelandic school system is in the spirit of traditional prescriptivism, where strong emphasis is placed on the teaching of correct language, in accordance to standardized language. Additionally, students see little point in learning this grammar (Angantýsson, Friðriksson & Konráðsson, 2018), which can be explained by the increasing dominance of the English language in their lives. It is therefore important to raise enthusiastic and responsible language users who want to apply Icelandic in every domain. To do that we need to change how we approach the teaching of Icelandic. The ideology applied here is called learner-centered grammar teaching and was first introduced in Óladóttir's PhD thesis (2017). Learner-centered grammar teaching evolves around the students' own language, and the language they use in all contexts is at the forefront of grammar teaching, rather than traditional textbooks and prescriptive grammar.

During the preparation of the grammar course, the ideology of learner-centered grammar was consciously applied in classroom activities, dialogues, lectures, and assignments. Group interviews were conducted with the students before the course began and various data were analyzed in detail (Birgisdóttir & Óladóttir, forthcoming).

The students were interested in the grammar lessons when learner-centered grammar was applied; especially regarding projects centered on their own language use and projects that had a clear connection to social issues. Connecting the students' own language with large social and cultural issues, as well as showing them that their voices, concerns, and actions do matter, seem to have the most impact on igniting their interest in the subject of the lesson

Keywords: Learner-centered teaching, Grammar teaching, Secondary school

References

- Angantýsson, Á., Friðriksson, F., & Konráðsson, S. (2018). Málfræði og málfræðikennsla. In K. J. Jónsson & Á. Angantýsson (pp. 135–174). Háskólaútgáfan.
- Birgisdóttir, H., & Óladóttir, H. (forthcoming). Learner-centered grammar teaching in secondary school.
- Óladóttir, H. (2017). *Skólamálfraeði: Hver er hún og hver ætti hún að vera? Um markmið og áhrif málfræðikennslu á unglingsstigi grunnskólans* [School grammar: What is it and what should it be? The goals and influence of grammar teaching at the highest level of compulsory school in Iceland]. [Doctoral diss.]. Háskóli Íslands.

Emergent Disciplinary Literacy. A Cross-Curricular Concept for Language Based Disciplinary Teaching in Early School Years

Oscar Björk, Uppsala University, Sweden

How disciplinary literacy develops and furthermore what can or should be regarded as signs of more advanced subject-specific writing in early school writing, are important questions that have yet to be sufficiently answered. They are important for two primary reasons, (1) because disciplinary literacies may provide the learner with unique linguistic resources to express disciplinary knowledge (Shanahan & Shanahan, 2012), and (2) that explicating such resources are central to enable student participation in the social practices of disciplinary teaching (van Leeuwen, 2008). Some researchers, however, argue that teaching disciplinary literacy should only take place after basic literacy skills are mastered (Faggella-Luby et al., 2012). Proponents of this view argue that a common set of strategies to read and write should be applied for all school subjects in early years of primary school. However, there are others that argue that it is possible to develop both general literacy skills and specialized disciplinary skills simultaneously (Fang & Coatoam, 2013) and that specialized instruction can have implications for elementary grades (Shanahan & Shanahan, 2014, p. 637). Proponents of this view mean that “The nascent sense of discourse differences may be the precursor to disciplinary literacy” (Fang & Coatoam, 2013, p. 628), speaking for the need for research examining whether or not features of disciplinary literacy can be detected even in early school writing.

In this presentation I will therefore give examples based on three empirical investigations (see e.g., Björk & Folkeryd, 2021) of how emergent disciplinary literacies may be detected and potentially cultivated in disciplinary teaching. These studies draw on various text analytical methods inspired by Systemic Functional Linguistics, combined with traits of various established descriptions of disciplinary literacies, emanating in a step-by-step analytical framework for the analysis of emergent disciplinary literacies.

Keywords: Emergent Disciplinary Literacy, Early School Writing, Subject Specific Writing

References

- Björk, O., & Folkeryd, J. W. (2021). Emergent Literary Literacy. *L1 – Educational Studies in Language and Literature*, 21, 1–25.
- Faggella-Luby, M. N., Graner, P. S., Deshler, D. D., & Drew, S. V. (2012). Building a house on sand: Why disciplinary literacy is not sufficient to replace general strategies for adolescent learners who struggle. *Topics in Language Disorders*, 32(1), 69–84. <https://doi.org/10.1097/TLD.0b013e318245618e>
- Fang, Z., & Coatoam, S. (2013). Disciplinary literacy: What you want to know about it. *Journal of Adolescent & Adult Literacy*, 56(8), 627–632. <https://doi.org/10.1002/JAAL.190>
- Shanahan, C., & Shanahan, T. (2014). Does disciplinary literacy have a place in elementary school? *The Reading Teacher*, 67(8), 636–639. <https://doi.org/10.1002/trtr.1257>
- Shanahan, T., & Shanahan, C. (2012). What is disciplinary literacy and why does it matter? *Topics in Language Disorders* 32(1), 7–18. <https://doi.org/10.1097/TLD.0b013e318244557a>
- van Leeuwen, T. (2008). *Discourse and practice: new tools for critical discourse analysis*. Oxford University Press.

To which degree do textbooks of German and English facilitate a multilingual pedagogy in texts, tasks and grammar explanations?

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During the last two decades, multilingualism has been widely promoted as a resource in language learning (Council of Europe, 2018; Norwegian Directorate for Education and Training [hereafter NDET], 2019). The competence aims in the subject curricula for English and Foreign Languages (NDET) distinctly involve both multilingualism and metalinguistic awareness; the latter being an important aspect that can strengthen language learning (Haukås, 2014; Haukås, Bjørke & Dypedahl, 2018). However, several studies show that teachers in Norway lack knowledge of the concept of multilingualism, and are uncertain as to how to implement it in their teaching (Haukås 2016; Myklevold, 2022). Evidence also suggests that the multilingual turn has been mostly developed in theory and to a lesser degree in practice (Paquet-Gauthier & Beaulieu, 2016). Meier (2016) claims that a reason for this is that the teachers lack support and guidance in how to implement multilingualism in the classroom.

Additionally, Berthel  (2021) argues that the construct of multilingualism is unclear and that it needs to be clarified, not just celebrated. As text books often are resources that teachers rely on and plan their teaching in accordance with (Llovet Vil , 2020), this study will conduct analyses of how multilingualism is represented in the most commonly used textbooks in English and German for Years 8–10, in order to find whether they support the teachers in implementing a multilingual approach in their language teaching.

The presentation will be given in Norwegian.

Keywords: Textbooks, Foreign language learning and teaching, Multilingualism

References

- Hauk s,  . (2014). Metakognisjon om spr k og spr kl ring i et flerspr klighetsperspektiv. *Acta Didactica Norge*, 8(2), 1–16, Art-7. <https://doi.org/10.5617/adno.1130>
- Hauk s,  ., Bj rke, C., & Dypedahl, M. (Eds.). (2018). *Metacognition in Language Learning and Teaching*. Routledge. Open access: <https://www.taylorfrancis.com/books/oa-edit/10.4324/9781351049146/metacognition-language-learning-teaching-camilla-bj%C3%B8rke-magne-dypedahl-%C3%A5sta-hauk%C3%A5s>
- Lovet Vila, X. (2020). L remidler i fremmedspr ksfaget. In C. Bj rke &  . Hauk s (Eds.), *Fremmedspr ksdidaktikk* (pp. 304–323). Cappelen Damm Akademisk.
- Meier, G. S. (2016). The multilingual turn as a critical movement in education: Assumptions, challenges and a need for reflection. *Applied Linguistics Review*, 8(1), 131–161. <https://doi.org/10.1515/applirev-2016-2010>.
- Myklevold, G.-A. (2022). *Multilingualism in mainstream language education in Norway: Perceptions and operationalizations*. [Doctoral diss.]. University of South-Eastern Norway.
- Paquet-Gauthier, M., & Beaulieu, S. (2016). Can language classrooms take the multilingual turn? *Journal of Multilingual and Multicultural Development*, 37(2), 167–183.

Digital Relational Competence for Higher Education Teachers

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In the post-pandemic educational space, the higher education teacher (universities of applied science and universities) has received added pressure in the demands for digitally mediated education and supervision.

The aim of the present study is to increase higher education teachers' socio-emotional competence and especially their digital relational competence in order to implicitly increase the quality and efficacy of teaching and the engagement of students. The focus of the study is the teacher-student relationship (TSR) along with the digital means for it and a collaborative approach to learning about it. The study constitutes curriculum development within professional development.

The project is a professional development intervention using collaborative action research from a sociomaterial viewpoint. Voluntary higher education teachers take part in a course designed to allow them to learn about digital relational competence, experiment with implementing elements in their own courses and then in Nordic forms of research circles analyze their own practices (sayings, doings and relatings) and the course will be further developed through two additional iterations.

Data will be collected in multiple forms to better create mappings of the complex relationships between the human and the non-human in a digitally mediated learning situation. The quantitative and qualitative data will be collected in three iterations of the professional development course offered, intending for data comparison and data integration to attain a fuller (re)presentation of the entanglement of both human and material in digitally mediated learning when trying to become more digital relationally competent as a higher education teacher.

Expected results include increased socio-emotional competence and higher levels of experienced self-efficacy related to digital relational competence.

Keywords: Distance learning, Digital relational competence, Professional development, Student-teacher relationship, Entangled pedagogy

References

- Fawns, T. (2022). An entangled pedagogy: Looking beyond the pedagogy – technology dichotomy. *Postdigital Science and Education*. <https://doi.org/10.1007/s42438-022-00302-7>.
- From, J. (2017) Pedagogical Digital Competence – Between Values, Knowledge and Skills. *Higher Education Studies*, 7(2), 43–50. <https://doi.org/10.5539/hes.v7n2p43>
- Wiklund-Engblom, A. (2018). Digital relational competence: Sensitivity and responsivity to needs of distance and co-located students. *Seminar.net – International journal of media, technology and lifelong learning*, 14(2), 188–200. Available: <https://journals.oslomet.no/index.php/seminar/article/view/2979/2878> [26.02.2022].
- Wiklund-Engblom, A., Björkell, J., Backa, L., & Wihersaari, M. (2016). *Dimensions of usability as a base for improving distance education: A work-in-progress design study* [Paper presentation]. The 5th International Designs for Learning Conference, 91–97. May 17–20, Copenhagen.

Facts vs. "Flum"

– Conceptions of Humanistic Knowledge in the Debates on Swedish Schools

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Since the 1970s, politicians and opinion makers with varieties have recurrently used the term "flum" in debates about the Swedish school system. "Flum" – which roughly translates to "nonsense" or "rubbish" – is often pitted against "facts" or "knowledge" and used rhetorically as a way of discrediting humanities subjects that deal with reasoning, ambiguity, and abstract thinking. My study focuses on the use of "flum" and investigates the conceptions of knowledge that informs its pejorative uses in these debates. This investigation uncovers a further question: could "flum" be valued and appreciated from a humanities' perspective?

By turning to philosophers and theorists such as Zygmunt Bauman, Bruno Latour and Hartmut Rosa, I argue that the construction of the dichotomy between "facts" and "flum" is nurtured by the ideal of measurable knowledge prominent in contemporary policy discourse. Furthermore, I argue that the dichotomy draws heavily on the fear of "post-truth" society as well as on the disdain for the supposedly relativistic nature of postmodern thought. At the same time, "flum" has become something of an empty signifier that lends itself to different actors as a way of demonizing political opponents. Finally, I turn to my own field of teaching literature and explore how some of the common characteristics of "flum" could have valuable theoretical and didactical implications.

Keywords: "Flum", Knowledge, Policy discourse

References

- Bauman, Z. (1991). *Modernity and Ambivalence*. Polity Press.
Latour, B. (1993). *We Have Never Been Modern*. Harvard University Press.
Rosa, H. (2019). *Resonance. A Sociology of Our Relationship to the World*. Polity Press.

The landscape of learning materials in science: A national survey of science teachers' use of learning materials in Danish compulsory school

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In Denmark and in the other Nordic countries, systematic knowledge about science teachers' use of learning materials is very sparse. Such knowledge is valuable for several reasons. Research has repeatedly documented that learning materials exert a strong influence on teaching both in general (Warren, 2000) and specifically in science (Sanchez & Valcárcel, 1999). Likewise, studies show that learning material texts in science are particularly demanding for students due to their linguistic and multimodal complexity (Bremholm, 2014). Furthermore, the extensive digitization of both schools and learning materials particularly in Denmark (Fougt et al., 2020), points to the need for knowledge about the degree to which the digital learning materials are adopted by the teachers in different subjects, including science.

In this paper, we present an ongoing study that addresses the need for systematic knowledge about science teachers' use of learning materials. The study is based on a survey conducted among science teachers in Danish compulsory school (year 1 to 9) in December 2022. The purpose of the study is to map Danish science teachers' use of learning materials, regarding among others which learning materials are used and how they are used, including the scaffolding of the students' reading. Methodologically, a stratified cluster sampling design is applied in the survey (Lehtonen & Djerf, 2008). The final sample comprises a total of 92 schools and 707 science teachers. In Danish compulsory school, science is divided into four different subjects: nature/technology (year 1–6), physics/chemistry, biology, and geography (year 7–9). To assure the representativeness of the study, we have applied a distributed design where each teacher received a questionnaire targeting a specific science subject and class level.

The presentation will focus on the methodological design and on selected findings from the analysis of questionnaires. In conclusion, we discuss the didactic implications of these findings.

Keywords: Learning materials, Science, Survey study

References

- Bremholm, J. (2014). *Veje og vildveje til læsning som ressource: Teksthændelser i naturfagsundervisning med og uden læseguide – et interventionsstudie om literacy i naturfag i grundskolen* [Reading as ressource: Literacy events in science teaching with and without reading guides – an intervention study on literacy in science in lower secondary school]. [Doctoral diss.]. Aarhus University/DPU.
- Fougt, S.S., Bremholm, J., & Buch (2020). What learning materials reveal about Danish L1 as a school subject. Background, methods, and results from a collaborative mixed methods study on learning materials in Danish L1 education. *L1 - Educational Studies in Language and Literature*, 20, 1–23. doi.org/10.17239/L1ESLL-2020.20.02.04
- Lehtonen, R., & Djerf, K. (2008). *Survey sampling reference guidelines: Introduction to sample design and estimation techniques*. Office for Official Publications of the European Communities.
- Sanchez, G., & Valcárcel, V.M. (1999). Science teachers' views and practices in planning for teaching. *Journal of Research in Science Teaching*, 36(4), 493–513.
- Warren, L. L. (2000). Teacher planning: A literature review. *Educational Research Quarterly*, 24(2), 37–42.

Interest organisations and social studies

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The subject of social studies (samfunnsfag) is basically contested. From one curricular reform to the next, the subject is more often than not basically reoriented not only in terms of methods, but also regarding aims and contents. Also the most recent reform in 2020 completely reorganized the subject around new, cross-disciplinary core elements that are hardly derived from the adjacent scientific disciplines.

It is therefore an urgent question who actually influences the aims and contents of the subject, and the role of interest organisations, apart from the teacher unions, are not well documented in this perspective. To what extent do they engage in the development of social studies at all? March and Olsen (1995) makes a distinction between democratic governance, in which a democratic state maintains and develops its nature as a democratic political system, and on the other hand, interest politics where resources, benefits and burdens are distributed. Do interest organisations support systemic needs for democratic governance or do they expand interest politics to democratic governance? The research question for this paper is therefore: Have interest and idealist organisations tried to influence the aims and contents of social studies? Do they engage in interest politics or democratic governance?

Attention is limited to the 2020 reform. The method of research will be to examine the open hearing on the 2020 curriculum. Drafts of the new curriculum was published and a broad range of actors were invited to make comments, critique and suggestions. This material will thus make it possible to identify interest organisations with an interest in social studies, and to examine what they suggest. The next step will be to contact the organisations in question and ask whether they have developed pedagogical materials, standards, advice and to analyse this material as well.

Keywords: Social studies, Power, Norway, Didactics, Interest groups

References

- March, J. G., & Olsen, J. P. (1995). *Democratic Governance*. Free Press.
- Parker, W. C. (2008). Knowing and doing in democratic citizenship education. In L. L. Levstik & C. A. Tyson (Eds.), *Handbook of Research in Social Studies Education* (pp. 65–80). Routledge.
- Samuelson, M., & Bøyum, S. (2015). Education for deliberative democracy: Mapping the field. *Utbildning & Demokrati*, 24(1), 75–94.

Textbooks supporting L2 upper secondary academic writing

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This paper presentation departs from an interest in the didactic functionality of textbooks aimed at upper secondary Swedish as a second language, especially chapters on investigative writing, and the question what support textbooks can offer the student when preparing for a high-stakes national test. The essay students are required to produce on that single occasion, an investigative text or pm, must meet certain criteria. Among these are a logical disposition, a correct handling of sources and the use of formal language – thus a clear example of a demanding *high literacy* (Langer, 2001).

Systemic functional linguistics provides a theoretical framework for exploring the lexico-grammatical choices behind the textbook page (Halliday & Matthiessen, 2014; Kress & van Leeuwen, 2019).

In this presentation, the focus is on a lexical cohesion analysis. In what ways can lexical cohesion choices (synonymy, contrast etc.) support the multilingual student learning to write academic texts in the majority language of Swedish? The findings show a range of instances of lexical cohesion, those that support possible learning opportunities and those that run the risk of confusing or discouraging the multilingual student. These examples are then further discussed in their capacity of linguistic resources for explaining a certain subject content and engaging the student to write.

In Sweden as well as in other Nordic countries, research will benefit from further findings on how the components that make up an educational setting, among which textbooks is one, can better pave the way for the academic achievements of multilingual students. In the long run, both teacher education and classroom practice will benefit as well, since Swedish as a second language is a subject in constant policy crossfire (Hedman & Magnusson, 2021).

Keywords: Swedish as a second language, Writing instruction, Textbooks

References

- Halliday, M. A. K., & Matthiessen, C. M. I. M. (2014). *Halliday's introduction to functional grammar* (4th ed.). Routledge.
- Hedman, C., & Magnusson, U. (2021). Researching the Complexities of the School Subject Swedish as a Second Language: A Linguistic Ethnographic Project in Four Schools. *Languages*, 6, 205.
- Kress, G., & van Leeuwen, T. (2019). *Reading images. The grammar of visual design* (3rd ed.). Routledge.
- Langer, J. A. (2001). *Beating the Odds: Teaching Middle and High School Students to Read and Write Well*. *American Educational Research Journal*, 38(4), 837–880.

Solutions for the challenges on ESD faced by school subject teachers

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Education for sustainable development (ESD) has been addressed for decades and it is still significant for stakeholders to pay attention and action for ESD internationally. In the recent years, UNESCO has called attention to ESD via the Decade of ESD (2005–2014)), UNESCO's Global Action Programme (GAP) for ESD (2015–2019) and ESD for 2030 (2020-2030). What has been addressed and should be a concern for ESD after 2015 is about multi-stakeholders' and multi-communities' viewpoints and involvement as well as multi-disciplinary teaching and learning – referred to as “3M for ESD” in this presentation. Namely, ESD requires cooperation and co-construction among school students, teachers, local communities, as well as experts from outside schools. It is also in line with what researchers have indicated about the need for both holism and pluralism for ESD.

This presentation is based on a narrative review to delineate the challenges school subject teachers face globally and in Nordic countries. The challenges were analyzed based on the empirical studies, which focused on school teachers' reflections on ESD in relation to their teaching practice in general or outdoor settings including pre-school to upper secondary school levels. In the presentation, I argue for the need to embrace 3M for ESD and related teaching strategies in teacher professional development (TPD) for both pre- and in-service teachers. Solutions and a number of multi-disciplinary teaching models are suggested aiming for a holistic and pluralistic approach and 3M for ESD in school. Finally, the presentation explicitly considers the value of applying Communities of Practice (CoP) as a theory to guide educational practices and research for ESD in school.

Keywords: Education for sustainable development (ESD), School teachers, Challenges

References

- Aksland, C., & Chang Rundgren, S. N. (2020). 5th–10th-grade in-service teachers' pedagogical content knowledge (PCK) for sustainable development in outdoor environment. *Journal of Adventure Education and Outdoor Learning*, 20(3), 274–283.
- Chang Rundgren, S. N., & Rundgren, C.-J. (2010). SEE-SEP: From a separate to a holistic view of socioscientific issues. *Asia-Pacific Forum on Science Learning and Teaching*, 11(1), Article 2.
- UNESCO. (2014). *UNESCO roadmap for implementing the Global Action Programme on Education for Sustainable Development*.
<https://sustainabledevelopment.un.org/content/documents/1674unescoroadmap.pdf>
- UNESCO. (2020). Education for sustainable Development: a roadmap.
<https://unesdoc.unesco.org/ark:/48223/pf0000374802.locale=en>
- Wenger, E. (1998). *Communities of practice: learning, meaning and identity*. Cambridge University Press.

Oral and practical examination: Examination and assessment in Social Studies and History in Denmark, lower secondary school

Anders Stig Christensen & Heidi Eskelund Knudsen, UCL University College, Denmark

A rather unique form of examination marks Social Studies and History in Danish lower secondary school since 2016. Defined as an oral and practical examination, which takes place after 9th grade, students are required to – in advance and independently – formulate a problem for investigation, select source materials and prepare a supporting product, which they all together present and discuss during the examination (Børne og Undervisningsministeriet, 2021).

In the presentation, we describe the history of examination in Social Studies and History, and bring forward a case analysis from Social Studies, which can be used to discuss whether this form of examination gives the students an opportunity to show subject competence and whether it is likely to provide a basis for fair assessment. By presenting the case, we also give a portrait of how Social Studies and History are practiced in lower secondary school in Denmark.

The presentation provides an overview of the history of the examination in Social studies and History since the introduction in 2006. The overview is based on government documents and evaluations. Further, we present a specific examination case from 2018 by using teacher and student materials provided for the examination.

Described as ‘oral and practical’, the examination form is complex and mirrors the complexities of the two school subjects. The state of complexity offers the students the opportunity to show complex subject understandings but also bring challenges to both teachers and students. Regarding the assessment, the general complexity poses problems in the choice of what specifically to consider when grading student performances.

As the presentation is restricted to a single case, the possibilities for generalizations are limited. However, the study shows importance and possibilities for using materials from examinations in future research.

Keywords: Social studies, Social science education, History, History education, Assessment, Oral examination

References

- Berg, M., & Persson, A. (2020). Graderande granskning och förklarade glapp: Svensk historie- och samhällskunskapsdidaktisk forskning om lärares bedömningspraktik 2009–2019. *Nordidactica: Journal of Humanities and Social Science Education*, (1), 18–44.
- Børne og Undervisningsministeriet (2021). *Vejledning til folkeskolens prøver i historie, samfundsfag og kristendomskundskab i 9. klasse*. <https://www.uvm.dk/folkeskolen/folkeskolens-proever/faglig-forberedelse/proevevejledninger>
- Isager, J. M. (2021). "Hvis du vakler, er der ridser i lakken". *Mundtlige danske studentereksaminer fra elevperspektiv*. Institut for kulturvidenskaber, Syddansk universitet.
- Tofteskov, J., & Andersen, H. L. (2016). *Eksamen og eksamensformer: Betydning og bedømmelse* (2nd ed.). Samfundslitteratur.

Troelsen, S. (2020). *Forkastet eller anerkendt? Et eksplorativt studie i folkeskolelevers afgangseksamen i 'dansk, skriftlig fremstilling'*. Institut for Kulturvidenskaber, Syddansk Universitet.
<https://www.ucviden.dk/files/140191704/AfhandlingFrdigKorrigeret.pdf>

Observing and interpreting quality in social science teaching

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In connection with a NordForsk financed QUINT-project, a group of social science didactic researchers was formed. Within this group of researchers, the concept of teaching quality, and how to observe it, is central. In a recent article in JSSE (Christensen, 2022) I discuss the question. The purpose of the article is to contribute to a discussion about quality for social science teaching and, in continuation hereof, to develop a tool for social science classroom observation and interpretation, for both direct and video-based observation. Classroom teaching is communication. Therefore, it is crucial that an analysis of quality of social science teaching includes a focus on communicative quality. The theoretical basis of the article is therefore threefold: 1) a Bakhtin-inspired communicative approach, 2) sociocultural ethnographic classroom research, and 3) social science didactics / social science teaching discourse.

It is concluded that communicative quality in social science teaching, and perhaps in teaching in general, can be observed as utterances in the classroom analysed for their coherence between form, content, and goal (intended function), which accordingly are the basic elements of an observation tool developed.

Keywords: Quality in Teaching, Tool for Observing Classroom Teaching, Social Science Teaching

Reference:

Christensen, T. S. (2022). Observing and interpreting quality in social science teaching. *Journal of Social Science Education*, 21(2), 128–152. <https://doi.org/10.11576/jsse-4147>

Sustainability – Student voices – Insights from a current Danish vocational upper secondary school project: *Global Goals as Subject Goals*

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The overall purpose of the Danish project *Global Goals as Subject Goals* is to empower students from two Danish vocational upper secondary schools to engaged participation in a society characterized by responsible consumption and production. The assumption is that Global Goals must be integrated in subjects to ensure in-depth work with climate problems (Straume, 2015). Furthermore, the assumption is that teaching must relate to students' attitudes to become deeply engaged in understanding the human dimension of global environmental change (Kollmuss & Agyeman, 2002; Lorenzone et al., 2007; Nawrotzki, 2012; Smith, Kim & Son, 2017) and in order to create a basis for transformative Bildung (Scheunpflug, 2022). To relate to students' attitudes in teaching courses, we applied a Video Club method, where students in groups of four physically separated discussed questions about sustainability following a question-guide and without an interviewer present.

In the presentation we analyse 36 recorded on-line video group discussions collected in the beginning of the project period, before the students have been taught about sustainability. The research questions are: What do the students think about sustainability? How do they think about sustainability (fragmented, linear – cause and effect, complex)? What solutions to the sustainability problem do they see (technical instrumental, ethical, political)?

The videos are analysed using various concepts of sustainability including scientific knowledge relevant to the vocational subjects (Dolan, 2002; Govindan et al., 2018; Hassini et al., 2012; Holt, 2012) and of students' attitudes (Lundholm, 2019). We present the results of the analyses and discuss what perspectives this raises in relation to the goals of empowering students to engaged participation in a society characterized by Sustainable Development and developing their capacity to make argued choices. In the discussion, we refer to concepts of democratic and economic Bildung (Engartner, 2010).

Keywords: Sustainability, Student attitudes, Transformative Bildung, Video Clubs, Vocational upper secondary schools

References

- Govindan, K., & Hasanagic, M. (2018). A systematic review on drivers, barriers, and practices towards circular economy: a supply chain perspective. *International Journal of Production Research*, 56(1–2), 278–311.
- Hassini, E., Surti, C., & Searcy, C. (2012). A literature review and a case study of sustainable supply chains with a focus on metrics. *International Journal of Production Economics*, 140(1), 69–82.
- Holt, D. B. (2012). "Constructing Sustainable Consumption: From Ethical Values to the Cultural Transformation of Unsustainable Markets." *The ANNALS of the American Academy of Political and Social Science*, 644(1), 236–255.
- Scheunpflug, A. (2022). Bildung faces globalization: theoretical reflections, empirical findings, and conceptual considerations for didactics. In E. Krogh, A. Qvortrup, & S. Graf (Eds.), *Knowledge, Bildung and Global Challenges in Education: Didaktik and Curriculum in the Era of the Anthropocene and Post-factual Truths*. Routledge

- Smith T. W., Kim, J., & Son, J. (2017). Public Attitudes toward Climate Change and Other Environmental Issues across Countries. *International Journal of Sociology*, 47(1), 62–80.
10.1080/00207659.2017.1264837
- Straume, I. S. (2015). The Subject and the World: Educational challenges. *Educational Philosophy and Theory*, 47(13–14), 1465–1476. [doi:10.1080/00131857.2014.951596](https://doi.org/10.1080/00131857.2014.951596)

Traces of Bildung in science education

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There is a need of a component in science education that can orient students to the complexity characterizing the natural sciences position in relation to a globalized risk society and the Anthropocene (e.g., Bencze et al., 2020; Yavuzkaya et al., 2022). Recently, the implications of the Continental-European philosophical and educational construct Bildung has been discussed in this regard (Sjöström et al., 2017). Bildung emphasizes learning and change that takes place based in a perspective of humans as relating with and indivisible from ‘the whole of their context’ (e.g., von Humboldt, 2000; Kvamme, 2021).

In this study we investigate in what aspect an orientation towards promoting Bildung manifests in five Swedish upper-secondary school chemistry teachers’ teaching visions and views for their teaching. In view of the reported impact of economic neoliberal policy in narrowing the scope of education, with such narrowing possibly excluding dimensions of philosophical-ethical reflection in science teaching, we also investigate in what aspect neoliberal goals might hinder a Bildung-orientation in the vision and views of the five chemistry teachers. A semi-structured interview was used to inquire into teachers’ practice by drawing from core questions associated with Continental-European Didaktik.

Results revealed Bildung-related capacities to be present in the chemistry teaching visions of all five teachers. Significantly, four of the five teachers reported contextual factors consistent with the impact of economic neoliberal policy in education as marginalising their work to realise Bildung-related capacities. Also, factors outside of teachers’ awareness were found to additionally marginalise Bildung. Common for all five teachers were economic neoliberal values at the level of teachers’ implicit beliefs, with our analysis pointing towards teachers viewing Bildung-related elements in their chemistry teaching as commodifiable entities. We argue that these implicit beliefs disempower the five teachers in relation to a teaching praxis that seeks to transform content for Bildung.

Keywords: Science education, Bildung, Didaktik

References

- Bencze, L., Pouliot, C., Pedretti, E., Simonneaux, L., Simonneaux, J., & Zeidler, D. (2020). SAQ, SSI and STSE education: defending and extending “science-in-context”. *Cultural Studies of Science Education*, 15, 825–851.
- Kvamme, O. A. (2021). Rethinking bildung in the anthropocene: the case of Wolfgang Klafki. *HTS Theologiese Studies*, 77(3), a6807. <https://doi.org/10.4102/hts.v77i3.6807>
- Sjöström, J., Frerichs, N., Zuin, V. G., & Eilks, I. (2017). Use of the concept of Bildung in the international science education literature, its potential, and implications for teaching and learning. *Studies in Science Education*, 53(2), 165–192.
- von Humboldt, W. (2000). Theory of Bildung. In I. Westbury, S. Hopmann, & K. Riquarts (Eds.), *Teaching As A Reflective Practice: The German Didaktik Tradition* (pp. 57–61). Routledge.
- Yavuzkaya, M., Clucas, P., & Sjöström, J. (2022). ChemoKnowings as Part of 21st Century Bildung and Subject Didaktik. *Frontiers in Education*, 7, 869156.

Process drama as a tool for enabling student explorations of "wicked problems" in upper secondary chemistry education

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Knowledge in chemistry is central for handling and understanding complex sustainability problems of today's society. If chemistry education is to be of relevance in relation to such challenging, or wicked (cf. Rittel & Webber, 1973), problems it is not enough with subject matter knowledge. Instead, chemistry teaching must be organized so that students will be provided opportunities to engage in conversations about wicked problems where knowledge of chemistry comes to matter (cf. Block et al., 2019). This study targets a special form of educational drama, process drama, as a potential means for enabling student engagement with wicked problems in upper secondary chemistry education.

The aim is to explore how process drama may afford student agency in dealing with complex sustainability issues in upper secondary chemistry education.

The study is a design-based study with interventions in two cycles in two schools. A process drama plan was designed focusing the problem plastic pollution. The interventions were video- and audiotaped and thereafter transcribed. The data material was analyzed using a combination of qualitative content analysis and a sociocultural framework of agency (cf. Goulart & Roth, 2010).

Our main finding is that process drama provided opportunities for students to talk about plastic pollution, while drawing on knowledge and perspectives of science as well as values and societal and social science perspectives and knowledge. Thus, the process drama mediated handling the plastic problem as a complex issue. Student agency was afforded in several ways. In brief, the process drama prompted a need to know and talk about chemical concepts related to the complex issues connected to chemistry content. However, the students mainly brought societal and ethical perspective into the drama (cf. Sjöström, Eilks, & Zuin, 2016), whereas the perspectives of chemistry was mostly introduced by the teacher. Further research on how to increase students' agency towards the scientific perspective is needed.

Keywords: Chemistry education, Process drama, Agency

References

- Block, T., Van Poeck, K., & Östman, L. (2019). Tackling wicked problems in teaching and learning. Sustainability issues as knowledge, ethical and political challenges. In K. Van Poeck, L. Östman, & J. Öhman (Eds.), *Sustainable development teaching. Ethical and political challenges* (pp. 28–39). Routledge Studies in Sustainability.
- Goulart, M. I., & Roth, W.-M. (2010). Engaging young children in collective curriculum design. *Cultural Studies of Science Education*, 5(3), 533–562.
- Rittel, H., & Webber, M. (1973). Dilemmas in a general theory of planning. *Policy Sciences*, 4, 155–169.
- Sjöström, J., Eilks, I., & Zuin, V. G. (2016). Towards Eco-reflexive Science Education. *Science & Education*, 25, 321–341.

Upper secondary vocational students' meaning making stories in relation to teachers' narratives in social science education

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Bildung is an often-overlooked aspect of vocational training. This paper puts interest in students' meaning making processes in social science education, as means for Bildung. In line with this, it argues for an understanding of narratives as crucial for communication in teaching and learning in social science. According to a socio-narratological theory approach *stories* are seen as individuals' stories and the analytical term *narrative* is used for narrative patterns. The student stories are understood based on what they *do*: how they offer meaning, interpretive frameworks and identities, how they set people in motion, and include or exclude individuals and groups from social, religious, cultural, national and local communities (Frank, 2012).

The purpose of the paper is to analyze students' meaning making stories related to teachers' narratives in social science education. Questions to be answered are:

- What challenges do students' stories raise for social science education?
- What narrative patterns can be found in students' meaning making stories?
- How are the narrative patterns in students' stories related to teachers' narratives?
- How can knowledge about students' stories and their narrative patterns become fruitful for teaching and learning in social science education?

The study is based on interviews with vocational students' and on classroom observations of their social science education in a Swedish upper secondary school. The analysis shows how students use their personal life stories to orientate and to position themselves in relation to the offered meaning of the teaching stories, and in relation to others in today's society (Gustavsson, 2013). Based on the analysis we argue that if teachers may come to understand students' life world experiences, by recognizing their stories as assets for teaching, possibilities are increased that education will lead to not only qualification and socialization, but also subjectification (Biesta, 2017).

Keywords: Social science education, Meaning making, Vocational students' stories

References

- Biesta, G. (2017). *The Rediscovery of Teaching*. Routledge.
- Frank, A. W. (2012). *Letting stories Breathe. A Socio-narratology*. University of Chicago Press.
- Gustafsson, B. E. (2013). Elevers meningsskapande i möte med historia. In N. Ammert (Ed.), *Historia som kunskap: Innehåll, mening och värden i möten med historia* (pp. 67–86). Nordic Academic Press.

Designing an Assessment Tool for Historical Literacy for Teacher Students in Basic Education

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To be able to teach and assess competences related to historical literacy, teachers must also practice these competences. Previous research has indicated that future teachers in basic education who are expected to teach and assess historical literacy, may be unwilling to adjust to competence-focused teaching of a traditionally content-focused subject (Rantala & Khawaja, 2021).

The purpose of this study is to design and implement an assessment tool for historical literacy for teacher students in basic education. Our objective is to support teacher students to become aware of changes in their epistemic thinking that support competence-focused teaching (Veijola, 2016). The assessment tool has been designed along the principles of assessment tools for historical literacy that include multiple sources (text, images and other materials), multiple-choice questions, open-ended questions, and oral discussions (e.g., see Khawaja, 2018; Manninen, 2014; Veijola et al., 2019). Furthermore, teacher students will conclude the exercise by designing their own assessment tool for the competencies that they have just mastered. Teacher students will document their progress in self-reflective learning diaries. The data of the study will consist of anonymized assessment results and learning diaries produced by a teacher student group (n=66) in February-March 2023. Preliminary data is available from beta tests conducted in spring and autumn 2022.

Keywords: Historical literacy, Assessment tools, Primary school teacher education

References

- Khawaja, A. (2018). Designing an assessment tool for historical literacy: the case of Copernicus. *Nordidactica: Journal of Humanities and Social Science Education*, 2018(3), 1–26. <http://kau.diva-portal.org/smash/record.jsf?pid=diva2%3A1257180&dswid=-4454>
- Manninen, M. (2014). *Piispa Henrik ja Lalli: Oppimateriaali historian tekstitaitojen opettamiseen*. Historiallis-yhteiskuntatiedollisen kasvatuksen tutkimus- ja kehittämiskeskus.
- Rantala, J., & Khawaja, A. (2021). Muuttaako ainedidaktinen opintojakso opiskelijoiden käsityksiä aineen opettamisesta? Tutkimus tiedonalalähtöisen historianopetuksen omaksumisesta luokanopettajakoulutuksessa. In R. Hildén, P. Portaankorva-Koivisto, & T. Mäkipää (Eds.), *Ainedidaktisia tutkimuksia: Aineenopetus ja aiheenopetus* (pp. 126–142). Suomen ainedidaktisen tutkimusseuran julkaisuja, Nro 20. Suomen ainedidaktinen tutkimusseura. <http://hdl.handle.net/10138/340235>
- Veijola, A. (2013). *Pedagogisen ajattelun kehittyminen aineenopettajakoulutuksessa: tutkimus suoravalituista historian opettajaopiskelijoista*. [Doctoral diss.]. University of Jyväskylä. Jyväskylä studies in education, psychology and social research, 478. <http://urn.fi/URN:ISBN:978-951-39-5350-8>
- Veijola, A., Rautiainen, M., Mikkonen, S., Niiranen, S., & Mäki, H. I. (2019). *Tutki ja tulkitse: Alakoulun historia: oppilaan kirja*, II (1st ed.). Kustannus Aarni.

Promoting first graders algebraic thinking of equation – a learning activity case

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The issue for this paper is to analyse what aspects of equations first-graders collectively can discern when exploring the structure of equations, following the El'konin-Davydov curriculum (ED curriculum) (Davydov, 2008). The ED-curriculum is realized through learning activity. Central concepts in learning activity theory (LAT) are e.g., problem situations, learning models and contradictions (Davydov, 2008).

This paper uses data from a lesson in School No. 91 in Moscow (Eriksson & Tabachnikova, 2022). The lesson is taught by Ms. Natalya Tabachnikova. The analysis addresses the task with its built-in aspects of equations that the students were expected to be aware of, in order to gain a theoretical understanding. Further foci for analysis are the problem situation given, the learning model used and especially the communicative actions. According to LAT, to make visible, for example, the relationship between whole and parts in an equation, a learning model and conscious work with it must take place. This requires that the teacher is sensitive to students' actions in order to see what they understand and what they not yet understand.

The problem situation given, when the students entered the classroom, was framed by three drawings on the board. The teachers asked first for similarities between the drawings. She was attentive to students' suggestions, but careful in what ways she responded. In her communicative actions, she uses the idea that contradictions function as a driving force in activities both to further students' work and to search for their understandings of the notion under study (Zuckerman, 2004).

The results indicate that the students discern that in an equation, the relational structure between a whole and its parts can vary, and the unknown can be either the whole or any of the parts. Furthermore, that one expression or equation can be used to solve different contextual problems.

Keywords: The El'konin-Davydov curriculum, Learning activity, Algebraic equations

References

- Davydov, V. V. (2008). *Problems of developmental instruction. A theoretical and experimental psychological study*. Nova Science Publishers, Inc.
- Eriksson, I., & Tabachnikova, N. (2022). "Learning models" – utilising young students' algebraic thinking about equations. *LUMAT*, 10(2), 215–238. <https://doi.org/10.31129/LUMAT.10.2.1681s>
- Zuckerman, G. (2004). Development of reflection through learning activity. *European Journal of Psychology of Education*, 19(1), 9–18.

A new approach to intercultural communicative competence in second language classrooms

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This presentation will give an overview and introduction to a new project about fostering the integration of intercultural communicative competence (ICC) (Byram 1997) into Danish as a second language classrooms. This project, as part of the larger project “Danish in the Making”, investigates the best ways to explain aspects of communicative culture (social values, communicative styles, and cultural keywords) that are embedded in Danish to make them accessible for learners and teachers of Danish as a second language.

With migration increasing around the world, second language teaching is more important than ever. The 30,000 migrants who arrive in Denmark each year become second (or additional) language learners of Danish and need to develop both linguistic competence and ICC. Without ICC, they face serious problems in understanding and being understood by the society and people around them. In turn, language teachers need to know how to teach these skills. Despite the centrality of ICC in the theoretical literature and in policy making, it is often neglected in second and foreign language learning and teaching (Sercu et al., 2005; Young & Sachdev, 2011). At the same time, second language teaching contexts present unique challenges, which require using simple and clear language to explain concepts, such as the emerging minimal languages approach (Goddard, 2018).

This project will, through a teacher and learner cognition study (Borg, 2006), discover teacher beliefs about teaching ICC in second language contexts in Denmark, as well as learner needs and attitudes regarding learning about communicative culture in Danish. The teacher and learner cognition study will then allow us to develop teaching materials in the form of classroom activities with focus on interaction and reflection, using the minimal languages approach, and to develop teacher training and professional development resources.

Keywords: Second language teaching, Intercultural communicative competence, Minimal languages

References

- Borg, S. (2006). *Teacher Cognition and Language Education: Research and Practice*. Continuum.
- Byram, M. (1997). *Teaching and Assessing Intercultural Communicative Competence*. Multilingual Matters.
- Goddard, C. (Ed.). (2018). *Minimal English for a Global World*. Palgrave.
- Sercu, L., Méndez García, M. C., & Castro Prieto, P. (2005). Culture Learning from a Constructivist Perspective. An Investigation of Spanish Foreign Language Teachers' Views. *Language and Education*, 19(6), 483–495.
- Young, T. J., & Sachdev, I. (2011). Intercultural communicative competence: exploring English language teachers' beliefs and practices. *Language Awareness*, 20(2), 81–98.

Discourses in Swedish students understanding of religion and religiosity and it's meaning for individual and society

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Globalization and migration place increased demands on knowledge of each other to be able to gain mutual understanding and respect. At the same time, research on religious education paradoxically show that classroom teaching and classroom communication in religious knowledge risk contributing to an "us and them" perspective where religion is something that concerns the "others" (Holmqvist Cöster, 2012; Kittemann Flensner, 2015; Lidh, 2016). The understanding of how students perceive religion and religiosity is interesting for the understanding of how religious education contributes to and might contribute to how we can live together in a socially sustainable way.

My PhD study aims to investigate Swedish and Danish students' understanding of religion and religiosity and its meaning for the individual and society. In this paper, I present findings from a systematic literature review on students understanding of religion and religiosity. The following discourses have emerged: religion as a remain, religion as truth claims, religion as threatful, religion as tolerated, religion as enriching and religion as subjectivized. Furthermore, the ambition is to present if and how these discourses appear in the interview answers from Swedish students in year 9, and how they concretely are expressed. An abductive analysis of the interview transcripts has been done in search for the discourses. Through this approach, the expectation is to be able to show which discourses that are current in the students' understanding and concretize what the discourses mean from the students' perspective.

Keywords: Student, Understanding, Religion

References

- Cöster, H. (2012). Utbildning till likgiltighet? Om religionsfobin som utmaning för religionsdidaktiken. I S. Lied & C. Osbeck (Eds.), *Religionsdidaktisk arbeid pågår! Religionsdidaktikk i Hamar og Karlstad* (pp. 251– 272). Oplandske Bokforlag.
- Holmqvist Lidh, C. (2016). *Representera och bli representerad: Elever med religiös positionering talar om skolans religionskunskapsundervisning*. [Licentiate thesis]. Karlstads Universitet
- Kittemann Flensner, K. (2015). *Religious Education in Contemporary Pluralistic Sweden*. Print.

Learning uses of history in upper secondary school. A Case Study in Sweden

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There is a broad consensus among history educators that the use of history (Swedish *historiebruk*) is linked to historical consciousness and historical culture (Nordgren, 2016; Olofsson, 2011; 2019). However, there is a lack of classroom studies on what such a relationship might look like in history teaching (Eliasson et al., 2012; Thorp, 2018). This paper presents parts of my dissertation that aims to investigate how high school students learn and understand the phenomenon of uses of the history. Rösen's (1989) narrative competence and historical culture are part of the theoretical framework for the thesis. The thesis is methodologically framed as an instrumental case study and it is inspired by Educational Design Research.

One history class enrolled in a theory-oriented and one history class enrolled in a practice-oriented program in upper secondary school participated in the study. The intervention study consisted of six lessons revolving around the concept of uses of history and Black Lives Matter. The empirical data was collected in autumn 2021 to spring 2022, in form of students' group interviews, individual teachers' interviews and classroom observations. The overall data consists of five interviews, fifty assignments, audio recordings of the group discussions and teachers' lectures, and five to six weeks fieldwork with each class. Moreover, the analysis is conducted abductively. Preliminary results from observations and interviews suggest that when studying uses of history through inquiry-learning, some conditions emerge helping students understand that history is both a social phenomenon and a discipline. The empirical analysis from the practice-oriented program suggests that students' understanding of uses of history has a spectrum of variation; for example, boys and girls diverge in understanding both aspects of history. In addition, most of the boys were more inclined to understand perspectives that were closer to their European identity, but struggled to grasp the Afro-American's perspectives.

Keywords: Uses of history, Classroom study, Narrative competence

References

- Eliasson, P., Alvé, F., Rudnert, J., Zander, U., & Rosenlund, D. (2012). Det är smart att använda historia i nya händelser...: Historiebruk i skola och samhälle. In *Historiedidaktik i Norden 9: Del 1: Historiemedvetande-Historiebruk*. Malmö högskola.
- Nordgren, K. (2016). How to Do Things With History: Use of History as a Link Between Historical Consciousness and Historical Culture. *Theory and Research in Social Education*, 44(4), 479–504. <https://doi.org/10.1080/00933104.2016.1211046>
- Olofsson, H. (2011). *Fatta historia: En explorativ fallstudie om historieundervisning och historiebruk i en högstadielklass*. [Licentiate thesis]. Karlstad University. <http://urn.kb.se/resolve?urn=urn:nbn:se:kau:diva-7359>
- Olofsson, H. (2019). *Historia på högstadiet: Historiekulturella yttringar i och utanför ett klassrum i Sverige hösten 2009*. [Doctoral diss.]. Karlstad University. <http://urn.kb.se/resolve?urn=urn:nbn:se:kau:diva-74739>
- Rösen, J. (1989). The Development of Narrative Competence in Historical Learning — An Ontogenetic Hypothesis concerning Moral Consciousness. *History and Memory*, (2), 35–59. <http://www.jstor.org/stable/25618580>

Thorp, R. (2018). Perspektiv på historiebruk – undervisa om hur historia används. *SO-didaktik*, (5), 56–60.
<http://urn.kb.se/resolve?urn=urn:nbn:se:su:diva-156899>

Can noticing competences support the development of L2 English student teachers?

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Though teacher noticing is emphasised as a crucial part of any teacher's classroom practice (Dindyal, 2021), research is limited on how L2 English teachers' noticing competences are developed in teacher education. By focusing on communicative, intercultural and subject didactic competences, we explore noticing as a prerequisite for developing L2 student teachers' competences. While Nation (2007) has studied noticing related to language acquisition, Byram and Fleming (2019) focus on how language education should combine linguistic and cultural aspects and lead to "Bildung", and Kabel and Bjerre (2020) show the challenges student teachers have with teaching grammar. The use of classroom videos shows a range of advantages (Blomberg et al., 2014). In our study, we hypothesise that the use of video analysis can catalyse the development of L2 English teachers' competences.

By drawing on empirical data from courses where classroom videos are introduced, we explore how student teachers develop noticing competences. The research question we pursue is the following: *what subject didactic reflections related to communication, intercultural competence and grammar can be recognized when student teachers interact with classroom videos of English teaching?*

The L2 English student teachers carried out a course in which they described, explained and predicted events based on classroom videos three times in an 18-month period. Between these courses, the students followed the regular L2 English curriculum. The empirical data have been collected in connection with these courses and consist of student teachers' (n=24) group dialogues, describing, explaining and predicting events from classroom videos from all three courses. The data have been analysed by distinguishing between communication, intercultural competence and grammar.

The study shows that they develop a high degree of subject terminology and fluency. Besides, they develop a high level of reflection on intercultural competences and grammar teaching.

Keywords: L2 English, Noticing, Subject didactic reflections

References

- Blomberg, G., Sherin, M. G., Renkl, A., Glogger, I., & Seidel, T. (2014). Understanding video as a tool for teacher education: investigating instructional strategies to promote reflection. *Instructional Science*, 42(3), 443–463. <https://doi.org/10.1007/s11251-013-9281-6>
- Byram, M., & Fleming, M. (2019). *Bildung (dannelse) and Language Education: Reflections on an integrated perspective*. *Sprogforum*, 69, 15–22.
- Dindyal, J., Schack, E. O., Choy, B. H., & Sherin, M. G. (2021). Exploring the terrains of mathematics teacher noticing. *ZDM—Mathematics Education*, 53(1), 1–16. <https://doi.org/10.1007/s11858-021-01249-y>
- Kabel, K., & Bjerre, K. (2020). Kontekstualiseret grammatikundervisning – hvad er det? *Viden om Literacy*, 27, 20–29.
- Nation, P. (2007). The Four Strands. *Innovation in Language Learning and Teaching*, 1(1), 1–12.

The teaching of historical thinking and reasoning in Icelandic upper secondary schools

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This study focuses on the teaching of historical thinking and reasoning (HTR – see e.g., Chapman, 2011; Seixas, 2017; Van Boxtel & Van Drie, 2018) in upper secondary education in Iceland. The aim was to find out to what extent teachers teach for these higher order thinking skills in their daily practice. The observation instrument, Teach-HTR (Gestsdóttir et al., 2018), was used to rate 54 history lessons of 27 teachers in 12 different schools. It turned out that some form of HTR was present in nearly all lessons: they included teachers' demonstration of historical thinking and reasoning, and teachers also engaged students in individual or group assignments that asked for various HTR activities. The use of historical sources to support HTR and drawing students' attention to multiple perspectives and interpretations was also quite widespread.

However, historical thinking and reasoning did not seem to be built upon in a strategic manner and certain areas were almost completely left out. The vocabulary of HTR was not deliberately used, which indicates that teachers may have been drawing more from their education as historians than as history teachers. The lack of communicating HTR goals and explicit teaching of the appropriate strategies may be a result of the fact that no mention is made of it the formal curriculum for upper secondary schools.

This study provided important indicators for professional development that can be of use in both teacher training and professionalization. With the help of the instrument Teach-HTR and the literature, a program was designed that helps student teachers focus on basic components of historical thinking and reasoning and specific behaviour, discourse and activities that bring it forward.

Keywords: History teaching, Upper secondary school, Historical thinking and reasoning

References

- Chapman, A. (2011). Historical interpretations. In I. Davies (Ed.), *Debates in history teaching* (pp. 96–108). Routledge.
- Gestsdóttir, S. M., van Boxtel, C., & van Drie, J. (2018). Teaching historical thinking and reasoning: Construction of an observation instrument. *British Educational Research Journal*, 44(6), 960–981. <https://doi.org/10.1002/berj.3471>
- Seixas, P. (2017). Historical Consciousness and Historical Thinking. In M. Carretero, S. Berger, & M. Grever (Eds.), *Palgrave Handbook of Research in Historical Culture and Education* (pp. 59–72). Palgrave Macmillan. https://doi.org/10.1057/978-1-137-52908-4_3
- Van Boxtel, C., & Van Drie, J. (2018). Historical reasoning: conceptualizations and educational applications. In S. A. Metzger & L. McArthur Harris (Eds.), *The Wiley International Handbook of History Teaching and Learning* (pp. 149–176). (The Wiley Handbooks in Education). Wiley-Blackwell. <https://doi.org/10.1002/9781119100812.ch6>

Affective and cognitive dimensions in education for sustainable development – a vignette survey in lower secondary schools

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In the field of education for sustainable development (ESD), there are efforts for measuring sustainability consciousness including affective, cognitive and behavioural dimensions (Gericke et al., 2019). Questions of affect and emotions, especially hope, are at the center of the discussion (Straume, 2020). In Denmark, investigations of these matters related to ESD on the lower secondary level are still missing.

The purpose of this explorative quantitative study is to identify patterns between affective, cognitive and enactive dimensions when students are exposed to different didactical design for ESD. This quasi-experimental vignette study (Atzmüller & Steiner, 2010) is based on dilemmas of teaching green transition, where three randomly assigned groups of respondents receive a different version of the dilemma. These three versions of the vignettes differ in the pathos of the representation of the dilemma. The survey includes the nature connectedness index (Richardson et al., 2019), an affective scale inspired by Yik et al. (2011), a self-developed scale for dilemma-specific knowledge and a range of background variables. The survey was carried out in 2022 with 2,000 students from grade 6, 7, 8 and 9 and 350 teachers from 11 schools in Denmark. Beside descriptive analyses, multivariate and regression analyses will be conducted in order to identify significant patterns between the dimensions for affect, cognition and decision-making, given the three versions of pathos and depending on background variables as age, nature connectedness and gender. The paper invites to discuss the survey design and the preliminary results.

Keywords: Education for sustainable development (ESD), Vignette survey, Affective dimensions

References

- Atzmüller, C., & Steiner, P. M. (2010). Experimental Vignette Studies in Survey Research. *Methodology*, 6(3), 128–138. <https://doi.org/10.1027/1614-2241/a000014>
- Gericke, N., Boeve-de Pauw, J., Berglund, T., & Olsson, D. (2019). The Sustainability Consciousness Questionnaire: The theoretical development and empirical validation of an evaluation instrument for stakeholders working with sustainable development. *Sustainable Development*, 27(1), 35–49. <https://doi.org/https://doi.org/10.1002/sd.1859>
- Richardson, M., Hunt, A., Hinds, J., Bragg, R., Fido, D., Petronzi, D., Barbett, L., Clitherow, T., & White, M. (2019). A Measure of Nature Connectedness for Children and Adults: Validation, Performance, and Insights. *Sustainability*, 11(12), 3250. <https://www.mdpi.com/2071-1050/11/12/3250>
- Straume, I. S. (2020). What may we hope for? Education in times of climate change. *Constellations*, 27(3), 540–552. <https://doi.org/https://doi.org/10.1111/1467-8675.12445>
- Yik, M., Russell, J. A., & Steiger, J. H. (2011). A 12-Point Circumplex Structure of Core Affect. *Emotion*, 11(4), 705–731. <https://doi.org/10.1037/a0023980>

Danish student teachers' development of noticing and reasoning in a longitudinal perspective

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The use of classroom videos as mediator for authentic observing and reasoning has shown a range of advantages (Blomberg et al., 2014). However, there is still a limited number of studies based on subject-comparative approaches and longitudinal investigations (Amador et al., 2021). The purpose of this study is to adopt the framework of learning to notice (van Es & Sherin, 2002) and the use of classroom videos, and integrate them into three subject-didactical courses (Danish L1, English L2 and mathematics) of Danish teacher education. Five course designs for learning to notice, focusing on the three phases of observing, reasoning, and predicting with progression over four semesters have been developed and carried out parallel in the three subjects.

Our research question is *what characterises student teachers' development of noticing and reasoning competences in three subjects over the period of their first two years of teacher education?* Especially, we are interested in the progression or degression of the student teachers' accurateness of noticing, the use of different kinds of didactical knowledge and kinds of arguments, and the ways of connecting the observed with didactical forms of knowledge.

The primary data consist of written works from the student teachers (3x5x20), transcripts from group discussions (3x5x6), recordings of plenary discussions with teacher educators (3x5), and as secondary data planning documents of the courses (3x5) and the used video clips. Our analysis builds on a multiple coding procedure in Nvivo in order to identify patterns for student teachers' development of competences between subjects over time in relation to the five course designs (Auerbach & Silverstein, 2003). The coding structure is inspired by van Es (2011) and validated through a partially double blind procedure. We expect patterns that differ over time (progression/degression) dependent on students' belief and knowledge, and on subjects.

Keywords: Learning to notice, Teacher education, Didactical knowledge

References

- Amador, J. M., Bragelman, J., & Superfine, A. C. (2021). Prospective teachers' noticing: A literature review of methodological approaches to support and analyze noticing. *Teaching and Teacher Education*, 99. <https://doi.org/10.1016/j.tate.2020.103256>
- Auerbach, C. F., & Silverstein, L. B. (2003). *Qualitative data: An introduction to coding and analysis*. New York University Press.
- Blomberg, G., Sherin, M. G., Renkl, A., Glogger, I., & Seidel, T. (2014). Understanding video as a tool for teacher education: investigating instructional strategies to promote reflection. *Instructional Science*, 42(3), 443–463. <https://doi.org/10.1007/s11251-013-9281-6>
- van Es, E. A., & Sherin, M. G. (2002). Learning to Notice: Scaffolding New Teachers' Interpretations of Classroom Interactions. *Journal of Technology and Teacher Education*, 10(4), 571–596. <https://www.learntechlib.org/primary/p/9171/>

van Es, E. A. (2011). A framework for learning to notice student thinking. In M. G. Sherin, V. Jacobs, & R. Philipp (Eds.), *Mathematics teacher noticing: Seeing through teachers' eyes* (pp. 134–151). Routledge.

Open-ended learning process in preschoolers' craft, design and technology education – How to support various learners?

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Early childhood is important for the development of learning motivation. Preschool aged children's experiences of themselves as a learner differs and affects their attitude towards learning. Identifying individual achievement goal orientations is necessary to differentiate teaching on a child-specific way. In this study, the achievement goal orientations and the teacher-child interaction are researched in preschoolers' open-ended learning task in craft, design and technology education (CDTE), as an ethnographic multi-case study of children in three preschool groups (n=44) and their teachers (n=3).

The purpose of the study is to explore what kind of different learner types can be found in preschoolers' open-ended CDTE and how can the teacher support these different types of learners. The study provides information about the preschoolers' achievement goal orientations in open-ended CDTE process and their teachers' point of views about the support of teacher-child interaction for these various learners. As a conclusion of the study, three different learner type descriptions are introduced to be considered as a guidance for the teachers to plan and execute open-ended learning processes in preschoolers' CDTE.

Keywords: Craft, design and technology education, Preschool, Achievement goal orientation, Teacher-child interaction

References

- Grönman, S., Lindfors, E., & Rönkkö, M. L. (2022). Esiopetusikäisten lasten tavoiteorientaatiot ja ohjausvuorovaikutuksen tarve käsityön oppimisprosessissa. *Journal of Early Childhood Education Research*, *11*(1), 151–178.
- Niemivirta, M., Pulkka, A.-T., Tapola, A., & Tuominen, H. (2019). Achievement goal orientations: A person-oriented approach. In K. A. Renninger & S. E. Hidi (Eds.), *The Cambridge handbook of motivation and learning* (pp. 566–616). Cambridge University Press.
- Pakarinen, E., Aunola, K., Kiuru, N., Lerkkanen, M., Poikkeus, A., Siekkinen, M., & Nurmi, J. (2014). The cross-lagged associations between classroom interactions and children's achievement behaviors. *Contemporary educational psychology*, *39*(3), 248–261.

INMAA classroom: A thinking space to promote interdisciplinary learning and students' well-being

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Research has shown that students think more actively while standing in comparison to sitting, and working on vertical non-permanent surfaces increases knowledge mobility within and between groups (Liljedahl, 2021). In addition, Movement Integration (MI) as a teaching method has benefits for the well-being of students and is also positively received and enjoyed by both students and teachers (Martin & Murtagh, 2017).

This presentation shows the development and first results of the application of the INMAA project (for its acronym in Spanish, Movement Integration in Classroom Subjects). This project aimed to teach pre-service teachers IM strategies using the living the curriculum approach (Oslin et al., 2001).

Inspired by the Building Thinking Classrooms method (Liljedahl, 2021), an INMAA classroom was designed and its use analysed. The INMAA classroom is a space that allows and aims to inspire different ways of learning by moving, or at least with movement. It also facilitates interdisciplinary activities (physical education and subject matter) by utilising in a gym with open space and physical education equipment.

The first results of the project are promising in terms of teachers' and students' motivation, as well as in the integration of MI strategies in the subject didactics programs, final degree projects and pre-service teachers' field experiences.

Keywords: Movement Integration, Teacher training, Interdisciplinary learning, Building Thinking Classrooms

References

- Liljedahl, P. (2021). *Building thinking classrooms in mathematics, grades K-12: 14 teaching practices to enhance learning*. Corwin.
- Martin, R., & Murtagh, E. M. (2017). Effect of active lessons on physical activity, academic, and health outcomes: A systematic review. *Research Quarterly for Exercise and Sport*, 88(2), 149–168.
- Oslin, J., Collier, C., & Mitchell, S. (2001). Living the curriculum. *Journal of Physical Education, Recreation & Dance*, 72(5), 47–51.

A didactic model for social science teaching

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Currently, we are witnessing increased societal change regarding new technological developments. How should social science teaching remain relevant and keep up with the advances in fields such as artificial intelligence? By launching 'the subject of the future', the Norwegian government made efforts to undertake this issue. However, the government report to the Parliament on a new school reform for upper secondary education (Meld.St. 21 2020–2021) created controversy due to the proposal to scrap a number of subjects, wherein only mathematics, English, Norwegian and 'the subject of the future' would remain. The new subject would replace traditional school subjects, e.g., social science, as it included topics such as democracy, equality, critical thinking and provided pupils basic historical and cultural insight. However, a sweeping public debate arose, as the subject was met with criticism among key politicians, teachers, and the press. This led the government to abandon the proposal. The conflict about 'the subject of the future' exhibit key dividing lines with reference to a disagreement on the pivotal focus and contents of school subjects based on disparate views on teaching and education.

This paper suggests a different approach to teaching in relation to addressing key developments and challenges in society. It presents a didactic model for social science teaching by examining which didactic categories to include to support teaching practices. The goal is to delineate a path wherein relevant knowledge and skills for students become revealed for the main societal challenges they face today and in the future. The point of departure is the didactic relation model for planning teaching (Bjørndal & Lieberg, 1978). A semantic theoretical approach is applied for a further development of this model (Kvernbekk, 2005). By drawing on Klafki's Bildung and Didaktik theory (2001; 2005), the model highlights how material and formal theories of Bildung can become intertwined.

Keywords: Social science teaching, Bildung-centred didaktik, Didactic relation model

References

- Bjørndal, B., & Lieberg, S. (1978). *Nye veier i didaktikken? En innføring i didaktiske emner og begreper* [New paths in didactics? An introduction to topics and concepts in didactics]. Aschehoug.
- Klafki, W. (2001). Kategorial dannelse. Bidrag til en dannelsessteoretisk fortolkning av moderne didaktikk [Categorical Bildung. Contributions to a Bildungtheoretical interpretation of modern didactics]. In E.L. Dale (Ed.), *Om utdanning – klassiske tekster* (pp. 167–204). Ad Notam Gyldendal.
- Klafki, W. (2005/2001). *Dannelsesteori og didaktik. Nye studier* [Bildung-theory and didactics. New studies]. Forlaget Klim.
- Kvernbekk, T. (2005). *Pedagogisk teoridannelse* [Pedagogical theory formation]. Fagbokforlaget.
- Meld. St. 21 (2020–2021). *Fullføringsreformen – med åpne dører til verden og fremtiden*. [The completion reform – with open doors to the world and the future]. Kunnskapsdepartementet.
<https://www.regjeringen.no/no/dokumenter/meld.-st.-21-20202021/id2840771>

Digital Textbooks support for academic reading and disciplinary literacy

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Digital textbooks are a special type of text and call for special and quite specific reading skills. Textbooks are the most important source of written knowledge for students in schools (Skjelbred & Aamotsbakken, 2008). A Digital Textbook is more than an electronic version of a printed textbook (Gueudet et al., 2018). The potential of the e-textbooks are the multimedia and interactivity dimension and the chance to create a more personalised learning approach for the students (Gu et al., 2015).

The aim of this project is to explore how Digital Textbooks are designed for and supports students' academic reading and what kind of theory of academic reading they represent. The project is part of a pilot study (2022–2023), initiated by The National Centre for Reading and Læremiddel.dk, about digital textbooks ("fagportaler" in Danish) and reading.

The project presents a framework that explores how digital textbooks support and scaffold students' reading based on a process approach to the reading task: before, during and after reading. There will be specific attention to reading support functions integrated in the textbook environment, reading tasks, text complexity and learning strategies. The analysis of the theory of reading is based on what kind of disciplinary literacy the textbooks represent (Blikstad-Balas, 2018; Shanahan & Shanahan, 2012).

The results are analyses of textbook courses in different subjects in grade 6 that will provide a deeper understanding of how digital textbooks support and scaffold students in their reading process and point out critical issues in relation to preparing student before, during and after a reading process. Of special interest is how our framework works to understand support and scaffolding of academic reading in textbooks.

Keywords: Academic reading, Digital textbooks, Disciplinary literacy

References

- Blikstad-Balas, M. (2018). *Literacy i skolan*. Studentlitteratur.
- Gu, X., Wu, B., & Xu, X. (2015). Design, development, and learning in e-Textbooks: what we learned and where we are going. *Journal of Computers in Education*, 2(1), 25–41.
- Gueudet, G., Pepin, B., Restrepo, A., Sabra, H., & Trouche, L. (2018). E-textbooks and connectivity: proposing an analytical framework. *International Journal of Science and Mathematics Education*, 16(3), 539–558.
- Shanahan, T., & Shanahan, C. (2012). What is disciplinary literacy and why does it matter? *Topics in language disorders*, 32(1), 7–18.
- Skjelbred, D., & Aamotsbakken, B. (Eds.). (2008). *Norsk lærebokhistorie: en kultur-og danningshistorie*. Novus.

First-year student teachers' experiences, knowledge and values when noticing teaching praxis in a Learning to notice course

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Research on teacher education acknowledges that first-year student teachers' prior educational experiences form their conceptions of teaching and learning, and that they consecutively develop their attitudes and values (Amundsen et al., 2021). The use of classroom videos has shown a range of advantages for student teachers and noticing is emphasized as a crucial part of teachers' classroom practice (Dindyal, 2021). UCL University College has launched a research and development project on the use of classroom videos and the Learning to notice framework (van Es & Sherin, 2002).

Our study explores what first-year student teachers identify as important and how they describe and reason on classroom events by pursuing this research question: What quality criteria can be identified in first-year student teachers' descriptions of classroom events, and what signifies the practical theories they draw on when reasoning? With practical theory (Lauvås & Handal, 2015), we distinguish between experience, knowledge and values as significant factors when reasoning in group dialogues. The four elements in PLATO (Grossman et al., 2015) are used to designate quality criteria.

The empirical data consists of Individual descriptions (n=69), group descriptions (n=19), group dialogues (n=19), and interviews (n=13). Initially, the descriptions are analyzed by focusing on quality criteria, then group dialogues are analyzed for reasoning by distinguishing between experience, knowledge and values, i.e., practical theories.

The study concludes that student teachers primarily focus on classroom environment and instructional scaffolding, while disciplinary demand and content are indistinct. When it comes to their reasoning, they tend to relate to their experiences and values prior to knowledge. This contributes to existing understandings on the importance of student teachers' practical theories as a point of departure for teacher education.

Keywords: Practical theory, Quality criterias, First-year student teachers

References

- Amundsen, D. L., Ballam, N., & McChesney, K. (2021). Students' transitions into initial teacher education: Understanding barriers and enablers through an ecological lens. *Australian Journal of Teacher Education* (Online), 46(3), 91–111. <http://dx.doi.org/10.14221/ajte.2021v46n3.6>
- Dindyal, J., Schack, E. O., Choy, B. H., & Sherin, M. G. (2021). Exploring the terrains of mathematics teacher noticing. *ZDM–Mathematics Education*, 53(1), 1–16. <https://doi.org/10.1007/s11858-021-01249-y>
- Grossman, P. (2015). *PLATO 5.0: Training and Observation Protocol*. CSET. Stanford.
- Lauvås, P., & Handal, G. (2015). *Vejledning og praksisteori*. Klim.
- van Es, E. A., & Sherin, M. G. (2002). Learning to Notice: Scaffolding New Teachers' Interpretations of Classroom Interactions. *Journal of Technology and Teacher Education*, 10(4), 571–596. <https://www.learntechlib.org/primary/p/9171/>

A newly started project: Umeå School of Education Collaborates with an Upper Secondary School Regarding Student Teachers' Internships and their Degree Projects

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Swedish education is based on science and proven experience (SFS 2010:800, 5), and the teacher education programs prepare students accordingly. Therefore, student teachers' degree projects are important parts of their education. At Umeå University, the student teachers do their degree project after their last internship period. The degree projects are grounded in subject didactic research, while proven experience often is missing. In collaboration, first teachers working at an upper secondary school and researchers are to explore how teacher students' internship and degree projects can be developed to support student teachers' knowledge as well as their ability to evaluate and develop their didactic abilities.

The project is inspired by action research (Bergman & Viklund, 2021) and collegial learning (Lindqvist, 2019), as well as a similar project where student teachers' degree projects functioned as entry-level structures promoting practical research (Hansson, 2021).

The projects' partaking upper secondary school teachers will mentor student teachers during their internship. The teachers also participate in a research and development project at their school: *FOUyrk*. *FOUyrk* aims to develop the teaching of history, social studies, and religious studies for the vocational and training (VET) programs. Didactic research as well as school development projects have a limited interest in VET students' learning (Panican & Paul, 2019). When the student teachers later do their degree projects, they will be supervised by university teachers and the upper secondary school teachers act as co-supervisors.

Student teachers learn about systematic quality work based on practical research. The upper secondary school teachers increase their knowledge of the research process. Umeå School of Education and participating university teachers gain knowledge about practice-related subject didactic research.

Keywords: Collaboration, Action research, Student teachers

References

- Bergmark, U., & Viklund, S. (2021). *Aktionsforskning i undervisningen: från idé till handling* (1st ed.). Studentlitteratur.
- Hansson, K. (Ed.). (2021). *Delrapport Ulf-avtal. Examensarbete i samverkan mellan skola och lärarutbildning, Erfarenheter, lärdomar och framtidsspaning* (Rapport nr 1, 2021). Luleå tekniska universitet, Umeå universitet och Piteå kommun.
- Lindqvist, M. (2019). *Kollegialt lärande: att handleda i skolans värld* (1st ed.). Studentlitteratur.
- Panican, A., & Paul, E. (2019). *Svensk gymnasial yrkesutbildning: En framgångsfaktor för en effektiv övergång från skola till arbetsliv eller kejsarens nya kläder?* Svenska ESF-rådet.

The use and function of questions in whole-class conversations with a high degree of student engagement and uptake across different subject areas in Nordic lower secondary schools

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The demand for development of students' communicative, collaborative, and critical thinking skills has increased during the past two decades (Teo, 2019). Dialogic teaching has the potential to support students' development of such higher order thinking skills (see Reznitskaya, 2012). One of the central elements of dialogic teaching is that students engage in a common inquiry characterized by a progress in common thinking and answering of the central question. This is for instance inherent in Alexander's (2020) principle of cumulation and Mercer's (2002) Exploratory Talk. Two of the key features that affect the quality of dialogic conversations are thematic coherence and a deliberate use of questions. The aim of this project is to map the use of questions in whole-class conversations that complies with central requirements for dialogic teaching: uptake of student ideas, use of open-ended questions and a high degree of student engagement, leading to a discussion of the impact of questions on thematic coherence in whole-class conversations. Research question: *How does questioning impact the quality of whole-class conversations with a high level of uptake and student engagement in Language Arts, Mathematics and Social Science in a Nordic context?*

To answer this question I have conducted a qualitative thematic analysis (Braun & Clarke, 2006) of approximately 80 video-segments of 15-minutes from 54 different lessons in the LISANordic data from Denmark and Norway, in Mathematics, Language Arts and Social Science teaching (grades 8–9). These videos have been scored with the PLATO manual and high scores in the element Classroom Discourse has been the primary sampling criterion.

The preliminary results show that the demand for argumentation and justification is remarkably low, and the teachers use questions to connect students' input and ideas to a very limited degree, thus missing the opportunity to strengthen the thematic coherence of whole-class conversations.

Keywords: Dialogic Teaching, Teaching Quality, Conversational Coherence

References

- Alexander, R. J. (2020). *A dialogic teaching companion* (1st ed.). Routledge.
<https://doi.org/10.4324/9781351040143>
- Braun, V., & Clarke, V. (2006). Using thematic analysis in psychology. *Qualitative research in psychology*, 3(2), 77–101. <https://doi.org/10.1191/1478088706qp063oa>
- Mercer, N. (2002). *Words and Minds: How We Use Language to Think Together*. Taylor and Francis.
<https://doi.org/10.4324/9780203464984>
- Reznitskaya, A. (2012). DIALOGIC TEACHING: Rethinking Language Use During Literature Discussions. *The Reading teacher*, 65(7), 446–456. <https://doi.org/10.1002/TRTR.01066>
- Teo, P. (2019). Teaching for the 21st century: A case for dialogic pedagogy. *Learning, Culture and Social Interaction*, 21, 170–178. <https://doi.org/10.1016/j.lcsi.2019.03.009>

Student's abilities to engage in dialogue about sustainability

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We are in the midst of an Education for Sustainable Development (ESD) era prompted by a global call for education and training that contributes to a sustainable transition (Mogren & Gericke, 2017; Wals & Benavot, 2017). ESD teaching must refrain from imparting authoritative rules of action, which are, firstly, uncertain due to the unknown future (Straume, 2020; Wals, 2010) and, secondly, do not fit well with an education system based on democratic values (Wals, 2010). It must have a Bildung perspective referring to the complexity of sustainability issues and focusing on students' critical thinking (Vare & Scott, 2007, p. 194). Being able to relate to complex sustainability issues in a critical manner requires that the students are able to enter into dialogic inquiries.

In this paper, we examine if students from two Danish vocational upper secondary schools are able to engage in dialogue about sustainability issues. The research question is: *What characterizes Danish upper secondary school students' conversations about sustainability issues?*

The paper uses empirical data in the form of 36 Video Club conversations collected as part of a project called *Global Goals as Subject Goals*. We analyse these conversations focusing on if the students refer to environmental, social and economic dimensions of sustainable development and if their dialogues fulfil Robin Alexander's six principles of dialogue, prescribing that dialogue must be collective, supportive, reciprocal, deliberative, cumulative and purposeful (Alexander, 2020, p. 131).

We present the results of the analyses and discuss what perspectives this raises in relation to the Bildung perspective referring to the complexity of sustainability issues and focusing on students' critical thinking. Furthermore, we discuss the Video Club method as a way to promote a Bildung perspective, referring again to the complexity of sustainability issues and focusing on students' critical thinking.

Keywords: Sustainability, Vocational upper secondary school, Dialogue

References

- Alexander, R. J. (2020). *A dialogic teaching companion*. Routledge.
- Mogren, A., & Gericke, N. (2017). UBU implementation at the school organisation. *Environmental Education Research*, 23(7), 972–992.
- Straume, I. S. (2020). What may we hope for? Education in times of climate change. *Constellations*, 27(3), 540–552. <https://doi.org/10.1111/1467-8675.12445>
- Vare, P., & Scott, W. (2007). Learning for a change: Exploring the relationship between education and sustainable development. *Journal of Education for Sustainable Development*, 1(2), 191–198.
- Wals, A. E. (2010). Between knowing what is right and knowing that it is wrong to tell others what is right: On relativism, uncertainty and democracy in environmental and sustainability education. *Environmental Education Research*, 16(1), 143–151.
- Wals, A. E., & Benavot, A. (2017). Can we meet the sustainability challenges? The role of education and lifelong learning. *European Journal of Education*, 52(4), 404–413.

A backlash? Individualization and standardization in education

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In this paper, we argue that a tendency of standardization, driven from below, is leading to a backlash of the individualization of Norwegian education.

Firstly, we articulate a theoretical approach to discuss individualization and standardization as conflicting tendencies by combining Luc Boltanski and Laurent Thévenot's pragmatic sociology of orders of worth and Timmerman and Epstein's classification and life course of standards (Boltanski & Thévenot, 2006; Timmermans & Epstein, 2010). Secondly, we revisit former and recent research on curriculum reforms in Norway, as the empirical case in the analysis of the conflicting tendencies.

Former research has described the development of a culture of individualization, legitimated by an inspirational order of worth in schools (Hidle & Skarpenes, 2021; Skarpenes, 2007; 2014). We find that a wave of standardization in terms of activities and assessment is emerging, and discuss potential orders of worth engaged in its legitimation. Surprisingly, this tendency seems to be driven from below as a response to features of individualization such as differentiated education and the weight on self-realisation and individual authenticity in schools. Therefore, we argue that this represents a backlash to individualization of the educational system in Norway.

Keywords: Social studies, Assessment, Curriculum reform

References

- Boltanski, L., & Thévenot, L. (2006). *On Justification: Economies of Worth*. Princeton University Press.
- Hidle, K.-M. W., & Skarpenes, O. (2021). "Formalistisk obskurantisme"? Forsøk på dechiffreering av læreplanen i samfunnsfag. *Nordidactica*, 11(3), 24–50.
<https://journals.lub.lu.se/nordidactica/article/view/23504>
- Skarpenes, O. (2007). *Kunnskapens legitimering: fag og læreplaner i videregående skole*. Abstrakt forlag.
- Skarpenes, O. (2014). Education and the Demand for Emancipation. *Scandinavian Journal of Educational Research*, 58(6), 713–733. <https://doi.org/10.1080/00313831.2013.840677>
- Timmermans, S., & Epstein, S. (2010). A World of Standards but not a Standard World: Toward a Sociology of Standards and Standardization. *Annual Review of Sociology*, 36(1), 69–89.
<https://doi.org/10.1146/annurev.soc.012809.102629>

A Didaktik model for cross-curricular teacher collaboration

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Teacher collaboration is currently proposed as a way of promoting school development and learning communities. Working together in shared practices enables teachers to develop professionally by gaining new insights on their teaching and student learning, which may increase both the effectiveness of education and teachers' professional wellbeing (Hargreaves & O'Connor, 2017; Lysberg, 2022). However, teacher collaboration does not automatically lead to positive outcomes. There are many factors affecting the collaborative processes, such as organizational resources and teachers' personal approaches (Toikka & Tarnanen, 2022).

In this paper presentation, we intend to discuss the possibilities and challenges of cross-curricular teacher collaboration that may occur when individual teachers with different subject affiliations come together in shared practices. Collaboration can be encouraging and limiting depending on the context of the school and the professional inclinations of the teachers involved. Teachers must consider factors such as the subject-divided school structure and available resources of time, materiality, and economy. These are usually issues of immediate priority when teachers plan collaborative teaching activities (Lysberg, 2022; Toikka & Tarnanen, 2022). Studies have shown that conflicts and negotiations often relate to teachers' didactic positions and worldviews (Frederiksen & Beck, 2013).

We will present a revised didactic model for cross-curricular teaching (Mård & Hilli, 2020). The model provides a framework for planning, implementing, and reflecting on cross-curricular teaching by highlighting factors such as subjects, competences, values and aims of education. The model also includes conditions for teaching such as the curriculum, school culture, and collaboration between teachers.

Keywords: Cross-curricular education, Teacher collaboration, Didaktik, Primary education, Secondary education

References

- Frederiksen, L. F., & Beck, S. (2013). Didactical Positions and Teacher Collaboration: Teamwork between Possibilities and Frustrations. *Alberta Journal of Educational Research*, 59(3), 442–461.
<https://journalhosting.ucalgary.ca/index.php/ajer/article/view/55749>
- Hargreaves, A., & O'Connor, M. T. (2017). Cultures of professional collaboration: Their origins and opponents. *Journal of Professional Capital and Community*, 2(2), 74–85.
<https://doi.org/10.1108/JPC-02-2017-0004>
- Lysberg, J. (2022). Unpacking capabilities for professional learning: teachers' reflections on processes of collaborative inquiry in situated teamwork. *Journal of Workplace Learning*, 35(1), 1–16.
<https://doi.org/10.1108/JWL-01-2022-0008>
- Mård, N., & Hilli, C. (2020). Towards a didactic model for multidisciplinary teaching – a didactic analysis of multidisciplinary cases in Finnish primary schools. *Journal of Curriculum Studies*, 54(2), 243–258.
<https://doi.org/10.1080/00220272.2020.1827044>
- Toikka, T., & Tarnanen, M. (2022). Understanding teachers' mental models of collaborations to enhance the learning community. *Educational Studies*. <https://doi.org/10.1080/03055698.2022.2052809>

Adopting a stance of inquiry when using classroom videos in mathematics in teacher education

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Classroom videos have been used in mathematics in teacher education for several years. They are emphasised to support the student's development of teacher noticing competences (Gaudin & Chaliès, 2015). Noticing competences and in particular describing, explaining, and predicting classroom situations are important elements of teacher expertise. A previous study has shown that when student teachers in mathematics work systematically with all three phases, it supports their theoretical reflections: they use several concepts from subject matter didactics when analysing complex classroom situations (Larsen et al., 2022). When it comes to student teachers' professional vision competences, it is important to distinguish between two interrelated dimensions of noticing: attending and interpreting, as well as another important dimension of interpreting: adopting a stance of inquiry (van Es & Sherin, 2021). In another study, van Es (2009) examines the roles the students adopt when analysing classroom videos. When students succeed in adopting a stance of inquiry, it can lead to a thorough description and more justified explanations of the classroom video.

In this study, we have involved student teachers in a course design with a classroom video concerning children's development of mathematical understanding of measuring (Lehrer et al., 1999) in an inquiry-based setting. Our aim is to investigate student teachers' competences to adopt a stance of inquiry in group discussions when analysing classroom videos.

Our empirical data includes written descriptions (and re-descriptions) of a classroom video (n=11 student teachers, n=3 groups), group discussions (transcribed audio files, n=15), transcribed interviews (n=4) (the students were randomly selected). The data has been thematically coded connecting adopting a stance and the roles the students adopt in the group discussions. Preliminary results show that certain roles while discussing, describing and explaining the video are very decisive for the student's ability to adopt a stance of inquiry.

Keywords: Learning to notice, Participants roles, Mathematics

References

- Gaudin, C., & Chaliès, S. (2015). Video viewing in teacher education and professional development: A literature review. *Educational research review*, 16, 41–67.
- Lehrer, R., Jacobson, C., Kemeny, V., & Strom, D. (1999). Building on children's intuitions to develop mathematical understanding of space. In E. Fennema & T. A. Romberg (Eds.), *Mathematics classrooms that promote understanding* (pp. 63–87). Lawrence Erlbaum Associates.
- Larsen, D., Hjelmberg, M., Junge, L., Schou, J., & Kørhsen, L. (2022). Fagdidaktik i praksissituationer—Learning to notice i læreruddannelsens matematikundervisning. *MONA-Matematik-og Naturfagsdidaktik*.
- van Es, E. A. (2009). Participants' roles in the context of a video club. *The Journal of the Learning Sciences*, 18(1), 100–137.
- van Es, E. A., & Sherin, M. G. (2021). Expanding on prior conceptualizations of teacher noticing. *ZDM—Mathematics Education*, 53(1), 17–27.

The multiplicity of choices in the national core curriculum challenges teacher education: Searching for student craft teachers' motivation for garment making

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With the aim of developing a master's-level garment-design and -making course emphasising sustainability, we started an educational design research (EDR) project. EDR is specifically suited for this kind of research, as it iteratively develops solutions to practical educational problems while also advancing theoretical understanding (McKenney & Reeves, 2013).

Garment design and making in Finnish craft education and craft teacher education has been studied since the subject of crafts was first introduced in the Finnish school curriculum in the 1860s, yet the period starting from the basic education reform in the 1970s has not been covered (Härkki & Rönkkö, submitted). The so-called multi-material crafts introduced by the latest core curriculum change 2016 left teachers with the responsibility of deciding which material technologies to include in their teaching. Many teachers at different levels of the education system were left confused (Kokko et al., 2020). Student craft teachers appear to share this feeling.

Among the first practical challenges to tackle is the differing levels of students' experience in garment making. In this study, we ask what constitutes a demanding garment for student teachers of multi-material crafts. Furthermore, we ask how to motivate more and less skilled student craft teachers to design and sew demanding garments. During the first two course implementations, we collected versatile materials (videos, sketches, portfolios and other coursework) from 11 (2021) and 24 students (2022). The content analysis of the videos and portfolios was used to classify students' garments according to the level of difficulty. Furthermore, we drafted four alternative ways to approach garment design and introduced these alternatives to 12 students who had participated in the 2022 course through structured interviews. The students had clear preferences. We discuss how to find balance between "demanding" coursework, students' previous garment-making experience and craft teacher qualifications.

Keywords: Craft Teacher Education, Garment design and sewing, Multimaterial Crafts

References

- Härkki, T., & Rönkkö, M.-L. (submitted). Student craft teachers' garment-fitting process analysed using qualitative video analysis.
- Kokko, S., Kangas, A., & Kangas, K. (2020). Finnish craft education in turbulence: Conflicting debates on the current National Core Curriculum. *Techné Series A*, 27(1), 1–19.
- McKenney, S., & Reeves, T. (2013). *Conducting Educational Design Research*. Routledge.

Qualified and motivated to teach?

Student craft teachers' experiences after their master's-level teaching practice

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What skills and knowledge should qualified teachers possess? The latest Finnish core curriculum change (2016) gave craft teachers new levels of freedom. Even though Finnish teachers traditionally have enjoyed strong autonomy (Tirri, 2014), this new level of pedagogical responsibility left many teachers confused (Kokko et al., 2020). The introduced 'multi-material' crafts no more defines material technologies to teach nor an option for pupils to choose between technical or textile crafts. Rather, in crafts, “multiple materials are used, and activities are based on craft expression, design, and technology” (FNBE, 2014).

In the middle of this change, also student craft teachers appear to be confused. To understand the pressures felt by student teachers and to develop craft teacher education, we started a multi-method study at autumn 2021. Until now, 60 student craft teachers at the end of their masters'-level teaching practicum have answered our survey and participated semi-structured interviews at the University of Turku, Rauma campus. The data collection continues spring 2023, but preliminary qualitative content analysis has been conducted on the interview data.

According to preliminary results, students are content with wide array of material technologies and craft techniques covered during their studies. Learning environments are seen well-equipped and versatile, and practicum periods are highly valued. However, the depth of the skills acquired during teacher education is widely questioned, and multi-material crafts is seen as challengingly broad subject. Most students feel competent in material technologies that they already mastered prior to teacher education. There is an apparent mismatch between students' expectations and learning experiences provided by the university courses. Unclear competence requirements effect also some students' motivation. Simultaneously, most students' experience from final practicum is that they coped well also in the other areas than their preferred strong technologies. This suggests another mismatch: between real-world competence requirements and students' expectations.

Keywords: Curriculum change, Multi-material craft, Teacher education

References

- FNBE. (2014). *National core curriculum for basic education*. Finnish National Board of Education.
- Kokko, S., Kangas, A., & Kangas, K. (2020). Finnish craft education in turbulence: Conflicting debates on the current national core curriculum. *Techne Series A*, 27(1), 1–19.
- Tirri, K. (2014). The last 40 years in Finnish teacher education. *Journal of Education for Teaching*, 40(5), 600–609.

Embracing unpredictabilities in L1 education and beyond: Can we ever know where teaching might take us?

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In this paper, we raise the question of embracing unpredictabilities in teaching. In recent research, educational scholars have begun to question if teaching can and should be constantly controlled, predetermined, and result driven. Following this line of thought, we ask: Do we know – or more precisely – can we ever know where teaching might take us?

To explore this question, we re-turn to our previous research within the context of literacies education, literary education, and arts-integration. We draw on data from two research projects that combined poetry with other art forms: dancing in primary education (Jusslin, 2020) and video-making in lower secondary education (Höglund, 2017). The cross-curricular teaching approaches can thus be understood as arts integration, aiming to promote students' knowledge-creation in all included disciplines (Marshall, 2014). Theoretically, we engage with a rhizomatic framework (Deleuze & Guattari, 1987/2013) that acknowledges that teaching and knowledge-creation can move in different irregular and infinite directions that are constantly and always unpredictable. The core idea is thus not to control the teaching and knowledge-creation and, more specifically, the creative and interpretative processes in arts integration, but instead to embrace the unpredictabilities of what can happen suddenly and unexpectedly. Analytically, this theoretical approach is put to work through a thinking with theory approach (Jackson & Mazzei, 2022).

With two vignettes, we present events to showcase how students' unpredictable doings were either hindered or allowed. Preliminary analyses suggest that seeking to control a predetermined assignment hindered students' unexpected doings and initiatives, which lead to potentially missing valuable possibilities for their interpretative work. Yet, allowing students' playful approaches – seemingly “goofing around” – moved their creative processes in rhizomatic directions that became crucial for their interpretative work. In conclusion, we discuss implications that the notion of embracing unpredictabilities might have for teaching practices.

Keywords: Rhizome, L1 education, Arts integration

References

- Deleuze, G., & Guattari, F. (2013). *A thousand plateaus: Capitalism and schizophrenia*. Bloomsbury Academic. (Original work published 1987)
- Höglund, H. (2017). *Video poetry: Negotiating literary interpretations. Students' multimodal designing in response to literature* [Doctoral dissertation, Åbo Akademi University]. <https://www.doria.fi/>
- Jackson, A. Y., & Mazzei, L. (2022). *Thinking with theory in qualitative research* (2nd ed.). Routledge.
- Jusslin, S. (2020). *Dancing/Reading/Writing: Performative potentials of intra-active teaching pedagogies expanding literacy education* [Doctoral dissertation, Åbo Akademi University]. <https://www.doria.fi/>
- Marshall, J. (2014). Transdisciplinarity and Art Integration: Toward a New Understanding of Art-Based Learning across the Curriculum. *Studies in Art Education*, 55(2), 104–127. <https://doi.org/10.1080/00393541.2014.11518922>

Difficult and controversial knowledge – Representation of atrocity in history classes 7th to 9th grade in Danish public schools

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The purpose of history teaching in Danish public school is for students to deal with people's lives and living conditions throughout the ages. This means that students encounter crimes and violations against people such as the Holocaust, genocide, human trafficking, acts of terrorism as well as war crimes to name a few. This raises ethical and didactic dilemmas not only about what students should learn about and from the content. But also what the content does to the students and, in that context, what could be fruitful ways to go didactically. By using the terms difficult knowledge and controversial knowledge, this presentation shows that atrocities are an essential part of the content of history lessons, and that both historical antipathy and historical empathy should be taken seriously as important factors in students' understanding and meaning-making when they meet representation of atrocity.

The study shows that aspects of atrocities in historical representations that are perceived by students as difficult and controversial emerge in situations and is constructed through the narratives produced in the classroom as teachers and students interpret and make sense of the content from a contemporary moral and existential point of view. The study is based on an ethnographic approach and an analysis of the narratives produced in the dialogues between teacher and students and in peer-to-peer conversations. Data originate from classroom observations of three history teachers' teaching in five classes in Danish public schools (7th to 9th grade) collected from August 2019 to December 2020.

Keywords: Difficult knowledge, History didactic, Atrocity

References

- Deldén, M. (2017). *Perspektiv på historiefilmslitteracitet: en didaktisk studie av gymnasieelevers historiska och emotionella meningsskapande i mötet med spelfilm* [Doctoral dissertation, Umeå Universitet]. <http://umu.divaportal.org/smash/record.jsf?language=sv&pid=diva2%3A1138127&dswid=4138>
- Crane, S. A. (2008). Choosing Not to Look: Representation, Repatriation, and Holocaust Atrocity Photography. *History and Theory*, 47(3), 309–330.
- Garrett, H. J. (2017). *Learning to be in the World with Others: Difficult Knowledge & Social Studies Education*. Peter Lang.
- Johannesen, H. J. (2022). Difficult knowledge og folkedrab i historieundervisningen i et elevperspektiv, *Nordidactica – Journal of humanities and social science education*, 3, 28–52
- Simon, R. I. (2011). A shock to thought: Curatorial judgment and the public exhibition of 'difficult knowledge'. *Memory Studies*, 4(4), 432–449. <https://doi.org/10.1177/1750698011398170>

OMA Ateneum – participatory art education and multidisciplinary teaching and learning in collaboration with art museum and primary schools

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In this presentation, we will introduce our research project *OMA Ateneum*, which aims to develop a research-based equal inclusion of children in the arts and to explore multidisciplinary teaching and learning in cooperation between schools and art museum. Our research data was gathered in collaboration with the Finnish National Gallery, Ateneum art museum, which organized remote workshops for primary school students in the fifth and sixth grades in cooperation with their teachers in years 2021–22. This national project called *My Ateneum* was funded by the Ministry of Education and Culture. The project provided 400 school classes a two-part package consisting of a virtual guided tour and virtual art workshop complete with background materials. Our research data consists of two on-line questionnaires concerning the feedback given by the teachers and the pupils participating in remote workshops. The feedback survey for teachers consisted of open questions related to inclusion and multidisciplinary learning.

In this presentation, we will mainly focus on the issue of inclusion and participatory art education from the teachers' point of view. We describe and analyze qualitatively the classroom teachers' perceptions of participatory art education during the remote workshops conducted by the art museum. Our methodological approach is phenomenological (Smith et al., 2009). According to our preliminary results, the teachers understood and perceived participatory art education in diverse ways. The teachers perceived participation and inclusion in terms of social interaction, activating teaching methods, inclusive museum practices and conceptions, and inclusive art practices and conceptions (see Gigerl et al., 2022; Schaaf, 2022; White, 2020).

Key words: Participatory art education, Art museum, Remote teaching, Primary school

References

- Gigerl, M., Sanahuja-Gavaldà, J. M., Petrinska-Labudovikj, R., Moron-Velasco, M., Rojas-Pernia, S., & Tragatschnig, U. (2022). Collaboration between schools and museums for inclusive cultural education: Findings from the INARTdis-project. *Front. Educ.* 7:979260. [10.3389/educ.2022.979260](https://doi.org/10.3389/educ.2022.979260)
- Schaaf, H. (2022). The Meaning of Participation. Detecting the space for inclusive strategies in the Finnish and German museum context [Doctoral diss.]. Acta electronica Universitatis Lapponiensis, 344. University of Lapland.
- Smith, A. J., Flowers, P., & Larkin, M. (2009) *Interpretative Phenomenological Analysis: Theory, method and research*. SAGE.
- White, I. (2020). *Participatory Arts for Creativity in Education (PACE) Model: Exploring the Participatory Arts as a Potential Model for Fostering Creativity in Post-Primary Education*. [Doctoral diss.]. Dublin City University.

Promoting phenomenon-based learning via students' reading engagement program by the @TARU model

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Versatile texts are in the core of all learning at schools. However, the text-related practices need to be updated according to the ideology of continuous learning. Multiple meaning making strategies, shared reading practices, and common knowledge building can form the basis for text-based learning (Anstey & Bull, 2018).

This paper is based on a 3rd grade classroom intervention, where versatile texts are at the core of phenomenon-based learning. Phenomenon-based learning can be broadly defined as a student-centered, multidisciplinary instructional approach (Tarnanen & Kostiainen, 2020). The students are encouraged to set the learning goals based on their own interests, find co-operationally relevant information from multiple textual resources and create a final product to show their learning outcomes.

The @TARU model presented in this paper is a research-based model for readers' engagement with texts. The @TARU model concentrates on increasing the amount of texts, the suitability of texts for diverse readers and meaningful, shared-reading activities. In the paper, the intervention is pondered from the perspective of an ecological process model of systems change (Peirson et al., 2011). The model includes four phases – succession, interdependence, cycling of resources, and adaptation – and offers a framework for analyzing the intervention and describing the mechanisms of the @TARU model for the needs of phenomenon-based learning. The first phase of the pilot produces various data such as the pedagogical continuum, the reading materials and activities, learning outcomes, student and teacher interviews, and the teacher's and researchers' memos. In the results, we describe the key practices of text-based learning which became relevant in the pilot. On the basis of the preliminary results, we consider what are the conditions to apply the @TARU model as part of phenomenon-based learning in the spirit of the socio-materialism paradigm (see Ennsner-Kananen & Saarinen, 2023), especially reading for learning from the perspective of social justice.

Keywords: Reading engagement, Phenomenon-based learning, Ecological process model

References

- Anstey, M., & Bull, G. (2018). *Foundations of Multiliteracies. Reading, Writing and Talking in the 21st Century*. Routledge.
- Ennsner-Kananen, J., & Saarinen, T. (2023). Towards socio-material research approaches in language education. In J. Ennsner-Kananen & T. Saarinen (Eds.), *New Materialist Explorations into Language Education* (pp. 1–17). Routledge.
- Peirson, L. J., Boydell, K. M., Ferguson, H. B., & Ferris, L. E. (2011). An ecological process model of systems change. *American Journal of Community Psychology*, 47(3–4), 307–321.
- Tarnanen, M., & Kostiainen, E. (2020). Ilmiölähtöinen oppiminen [Phenomenon-based learning]. In M. Tarnanen & E. Kostiainen (Eds.), *Ilmiömäistä! Ilmiölähtöinen lähestymistapa uudistamassa opettajuutta ja oppimista [Phenomenal! A phenomenon-based approach to reform teaching and learning]*. (pp. 6–19). University of Jyväskylä.

Dialogue on worldviews: perspectives on partly integrated worldview education in Finnish basic education

Cancelled!

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The Finnish system of worldview education (*Religious Education and Culture, Worldview and Ethics*) has a specific model constructed from the perspective of freedom of religion and parental rights to decide child's spiritual upbringing. Students study worldview education in groups arranged according to their membership, non-membership or affiliation in worldview related communities. Since the Western societies have grown more secular, plural and also polarized in the last decades, the future of Finnish model of worldview education is under much debate: how students from various backgrounds learn to critically reflect their worldviews and experiences relating to religious and worldview issues in current separated worldview education (Åhs, 2020; Kavonius, 2021). A need to promote mutual understanding is also one key issue in current education. By using inter-worldview dialogue as a pedagogical method and an aim, education can support students to live in diverse world (Patel, 2016). The importance of dialogue is also stressed in the Finnish core curriculum for basic education (Finnish National Board of Education, 2014).

On-going mixed-methods research project examines schools that implement partly integrated worldview education. The core research aim of the project is to explore how partly integrated worldview education is experienced by students, teachers and guardians. Preliminary results show for instance that integration in worldview education can support inter-worldview dialogue and feeling of belonging among students. However, teachers who implement partly integrated worldview education, hope for more education in pedagogy on inter-worldview dialogue.

Keywords: Teacher education, Partly integrated worldview education, Inter-worldview dialogue

References

- Finnish National Board of Education. (2014). *National core curriculum for basic education 2014*.
- Kavonius, M. (2021). *Young people's perceptions of the significance of worldview education in the changing Finnish society*. Helsingin yliopisto.
- Patel E. (2016). *Interfaith Leadership – A Primer*. Beacon Press.
- Åhs, V. A. (2020). *Worldviews and integrative education: a case study of partially integrative religious education and secular ethics education in a Finnish lower secondary school context*. Helsinki Studies in education, 89. University of Helsinki.

Religious education and civic engagement: discovering the role of religion in Finnish ethnic minority youths' agency

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Along with the Finnish Curriculum approach based on Bildung-Didaktik, which considers both the individual and social development of students into responsible citizens, the overall goal of religious education (RE) is to strengthen students' identities. Agency, defined as "the recognition of oneself as an actor in the society" is another important factor behind civic engagement. Therefore, in this article we aim to investigate the role of religion in Finnish ethnic minority youths' agency alongside its connections to civic engagement and RE in Finland. We interviewed ethnic minority youth aged 15 to 19 from a multicultural urban neighbourhood in Finland about their social and civic engagements. We examined how religion – as a belief system and as a community – supports or restricts interviewees' agency.

A qualitative content analysis of the data shows that the local religious communities provide both ethical inspiration and possibilities for civic volunteering. However, as most events are led by adults, young people primarily occupy supportive roles in these activities. Sometimes religion also restricted participation in youth-initiated activities that were considered to be foreign to Islam like Halloween. These insights show opportunities that probably are not fully recognized in RE. The civic potential of religion and religious communities could be addressed in RE and pupils' experiences in their religious communities could be used as examples of civic engagement. Furthermore, education on one's own religious tradition would give the young people tools to negotiate issues in their own religious communities.

Keywords: RE, Civic engagement, Agency

References

- Autio, T. (2013). The Internationalization of Curriculum Research. In W. Pinar (Ed.), *International Handbook of Curriculum Research* (pp. 17–31). Routledge.
- Khalili, S., Kallioniemi, A., & Bagheri Noaparast, K. (2022). Characteristics of human agency in liberal and Islamic religious education based on the national core curricula of Finland and Iran. *British Journal of Religious Education*, 44(1), 53–65
- Kimanen, A. (2022). Enhancing informed empathy as a key to promoting social justice in religious education classes. *Journal of Religious Education*. E-pub ahead of print.
- Peucker, M. (2018). On the (in)compatibility of Islamic religiosity and citizenship in Western democracies: The role of religion for Muslims' civic and political engagement. *Politics & Religion*, 11(3), 553–575.
- Teney, C., & Hanquinet, L. (2012). High political participation, high social capital? A relational analysis of youth social capital and political participation. *Social Science Research*, 41(5), 1213–1226.

Influence of the task on discussion promoting cooperative learning of physics in a smart learning environment

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The quality of discussion and argumentation affect students' learning outcomes in cooperative learning (Chinn et al., 2000). To promote discussion, tasks should be open-ended or require interpretation (Gillies, 2014; Horn, 2012). On the other hand, if tasks are evaluated automatically by a smart learning environment, the solutions must be predictable. So, to make cooperative learning in a smart learning environment effective and appropriate, tasks should be both simple enough to be evaluated automatically and open enough to promote discussion.

The aim of this study is to find out how different tasks influence the discussion between students when they are solving physics problems cooperatively in a smart learning environment. Eight student pairs from a university-level physics course participated in this study, and each pair solved the same six tasks. In addition, they were asked to answer a questionnaire related to cognitive load caused by the tasks. The cooperative problem-solving sessions were videotaped. Discussions were transcribed and their content was analysed by using a coding scheme based on Hogan, Nastasi and Pressley's (1999) study. Finally, the content of statements made by each student was compared in pairs.

According to preliminary findings, in most cases both students participated in the construction of conceptual understanding equally when solving a multiple-choice task. When solving a mathematical or open-ended task, there were more differences in speech profiles. Usually in these cases, the content of the other student's statements was more often related to the concepts of physics while statements of the other student were mainly nonsubstantive or metacognitive, e.g., "uhum" or "I don't understand". Since one possible explanation for the differences in the speech profiles may be the experienced cognitive load, questionnaire responses and the speech profiles will be compared with each other.

Keywords: Physics education, Cooperative learning, Smart learning environment

References

- Chinn, C. A., O'donnell, A. M., & Jinks, T. S. (2000). The Structure of Discourse in Collaborative Learning. *The Journal of Experimental Education*, 69(1), 77–97. <https://doi.org/10.1080/00220970009600650>
- Gillies, R. M. (2014). Cooperative Learning: Developments in Research. *International Journal of Educational Psychology*, 3(2), 125–140.
- Hogan, K., Nastasi, B. K., & Pressley, M. (1999). Discourse Patterns and Collaborative Scientific Reasoning in Peer and Teacher-Guided Discussions. *Cognition and Instruction*, 17(4), 379–432. https://doi.org/10.1207/S1532690XCI1704_2
- Horn, I. S. (2012). *Strength in numbers: Collaborative learning in secondary mathematics*. National Council of Teachers of Mathematics.

Pre-service subject teachers' disciplinary identities in interdisciplinary education

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Education, knowledge and Bildung in the global world face several so-called wicked problems such as climate change and global injustice. An interdisciplinary perspective plays an essential role in finding a solution to these challenges. Therefore, subject teacher training must be expanded beyond discipline-specific approach.

As Finnish subject teachers are primarily educated in their subject departments and only secondarily in the teacher education programmes, our aim was to investigate how the pre-service teachers develop interdisciplinary teacher's identity in their studies. We examined what kind of roles they constructed for diverse disciplines in relation to interdisciplinarity. Eighty-four pre-service subject teachers responded to open-ended questions on their reflections on an assignment to plan and give two lessons on controversial topics for 13–15-year-old pupils. The planning and implementation were conducted in interdisciplinary pre-service teacher groups. About half of the participants were future second language teachers, about one fifth Finnish and literature teachers, another fifth future biology, geography, history and religious education teachers and one tenth future mathematics and science teachers. Our discursive analysis identifies practices how the pre-service subject teachers construct their own discipline, other disciplines, other pre-service teachers' views of their disciplines and interdisciplinarity in teaching.

Preliminary results show that boundaries between disciplines were sometimes considered unimportant in interdisciplinary education and sometimes different disciplines were regarded as complementary. They reflected also on the profile of their own discipline from others' perspective and their observations on the characteristics of diverse disciplines. To conclude, we propose that increasing knowledge on different disciplines' characteristics and learning goals during the teacher education may promote future interdisciplinary collaboration.

Keywords: Collaboration, Interdisciplinary education, Subject teachers, Teacher education

References

- Beauchamp, C., & Thomas, L. (2009). Understanding teacher identity: An overview of issues in the literature and implications for teacher education. *Cambridge Journal of Education*, 39(2), 175–189.
- Chan, E. T. Y. (2016). "Being an English major, being a humanities student": connecting academic subject identity in literary studies to other social domains. *Studies in Higher Education*, 41(9), 1656–1673.
- Kate, H., James, J., & Tidmarsh, C. (2019). Using Wicked problems to foster interdisciplinary practice among UK trainee teachers. *Journal of Education for Teaching: JET*, 45(4), 446–460.

Refashioning storyworlds: Text universes as a path to enhanced reading of fiction

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This presentation will give insights into a research project conducted within the frames of the platform Stockholm Teaching and Learning Studies, aiming at bringing together scholars and in-service teachers who want to explore and develop their teaching in the subject Swedish (L1/L2). The project, called *Fictional Text Universes*, explored how students' reading literacy and mediational skills can be enhanced by refashioning and re-presenting fictional texts. Taking on the concept of text-universes (Svensson & Haglind, 2020), so-called core texts are transformed into re-presentations of different modalities, allowing the students to re-deploy their understandings of the texts and characters to other media forms. In doing so, they mediate the content of the core text and create a network of transmedial worlds (Klastrup & Tosca, 2004).

Nine teachers from several different school levels have taken part in collaborative sub-projects with the overarching aim of designing a literature teaching that allows their students to move across modalities, such as dramatic arts, TV series, novels, films and poetry. Our presentation will show how the teacher-participants and their students worked with refashioning the core fictional texts into own re-presentations. This transformational process highlighted the students' shifting conceptions of the original core texts over the transformation cycles, which makes up a large part of the project's preliminary findings.

The data collection comprises the students' re-presentations of the core texts in different media forms, as well as recorded student discussions while planning and creating their interpretations. Thematic content analysis (Braun & Clarke, 2006) was used to explore how the students' interpretations were given expression in their re-presentations. The preliminary results suggest a deeper exploration and comprehension of characters and themes by the students when applying a transformative approach based on concepts that were central to the present project (i.e., text universes and transmedial worlds).

Keywords: Literature teaching, Text universe, Transmedial worlds, Mediation, Teacher research

References

- Braun, V., & Clarke, V. (2006). Using thematic analysis in psychology. *Qualitative Research in Psychology*, 3(2), 77–101.
- Klastrup, L., & Tosca, S. (2004). *Transmedial worlds – Re-thinking cyberworld design* [Conference paper]. The 2004 International Conference on Cyberworlds, November 18–20, 2004. Washington, D.C., USA.
- Svensson, A., & Haglind, T. (2020). Textuniversum och gränsöverskridande lärande: Att arbeta med kreativt lärande i gymnasieskolans litteraturundervisning. In N. Elf, T. Høegh, K. Kabel, E. Krogh, A. Piekut, & H. Rørbech (Eds.), *Grænsegængere og grænsedragninger i nordiske modersmålsfag* (pp. 165–184). Syddansk Universitetsforlag og Nordisk Netværk for Modersmålsdidaktisk Forskning.

Motivational differences for students entering upper secondary school. Painting a nuanced picture taking school subject and program into account.

Eva Knekta, Anders Hofverberg & Hanna Eklöf, Umeå University, Sweden

Although there is a general opinion that students in vocational programs in upper secondary school are less motivated than students in academic tracks are (Olofsson & Panican, 2020; Panican, 2020), there are few large-scale studies comparing and problematizing motivation between these two groups of students (see however Symonds et al., 2019).

The aim of this study was to investigate the motivation, in terms of interest, perceived ability and engagement, students bring into upper secondary school and how that might differ within students between school subjects and between students in different programs. The data used was collected in 2014 within the *Swedish Evaluation Through Follow up*-project (Härnqvist, 2000). Data from 4303 students in the last year of lower secondary school (grade 9) in combination with information about which upper secondary program these students graduated from, was analyzed by means of both descriptive statistics and structural equation modeling.

Motivational data included a multiple-item scale of engagement in school and single items regarding students' interest in and perceived ability in 10 different school subjects. Engagement in school was operationalized through 10 items asking students how often they try to do different things at school, for example, to do their very best, learn so they can get a job, and learn new things. These items were analyzed both as separate items and by using factor analysis.

A first overarching analysis showed that future vocational students reported less interest, perceived ability, and engagement than future students in academic tracks. However, when nuancing the analysis both with respect to different school subjects and different vocational programs a different picture appeared. In this presentation, we will take a closer look at these nuances. We will also problematize what being less study motivated might mean for researchers, teachers, and students and how that could affect our general opinion of who is motivated and who is not.

Keywords: Motivation, Upper secondary school program, School subject

References

- Härnqvist, K. (2000). Evaluation through follow-up. A longitudinal program for studying education and career development. In C.-G. Janson (Ed.), *Seven Swedish longitudinal studies in behavioral science* (pp. 76–114). Forskningsrådsnämnden.
- Olofsson J., & Panican, A. (2020). Hur kan den gymnasiala yrkesutbildningens låga attraktionskraft förklaras? In A. Panican (Ed.), *Yrkesutbildning på Undantag? Att bryta den låga attraktionskraften* (1st ed., pp. 45–76). Studentlitteratur.
- Panican, A. (2020). Hur reflekterar högstadielärover? Yrkesutbildningens attraktionskraft inför gymnasievalet.? In A. Panican (Ed.), *Yrkesutbildning på Undantag? Att bryta den låga attraktionskraften* (1st ed., pp.103–126). Studentlitteratur.
- Symonds, J., Schoon, I., Eccles, J., & Salmela-Aro, K. (2019). The Development of Motivation and Amotivation to Study and Work across Age-Graded Transitions in Adolescence and Young Adulthood. *Journal of Youth & Adolescence*, 48(6), 1131–1145. [10.1007/s10964-019-01003-4](https://doi.org/10.1007/s10964-019-01003-4)

Education, knowledge and Bildung in a contemporary representational crisis

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Our presentation concerns “crisis of representation” (Marcus & Fischer, 1986) related to education, knowledge and Bildung. We face serious global-wide social and ecological challenges at the existential level. Some stakeholders, such as OECD, or Teacher Education Forum in Finland, suggest that 21st century competences will provide solutions to the wicked problems. We disagree. Mere skill analysis alone ignores both historical and political issues. Providing discrete skill solutions without investigating “what’s the problem represented to be” (Bacchi, 2009) also bypasses the critical point of whether global crises are methodological, epistemological, or ontological, and whether the solutions lay in pedagogical tools and competences, better research, or in profound change in our relationship with the world (Andreotti et al., 2018).

One line of critique worth examination asserts that the source of contemporary problems lays in humanist tradition and especially in the focus on anthropocentric thinking. However, concerning the damage to our planet, the main “influencer” in that destructive process has not been anthropocentric thinking. Throughout history, Aristotelian tradition has stressed development of human self-awareness, including well-grounded cultural bulwarks against the destruction of our planet. Rather, the main destructive influence has been modern natural science, which is predicated on methodological monism from a viewpoint of *nature-centered* thinking, scientism, and excessive reductionism (Radnitzky, 1970).

Another line of critique comes from decolonial thinking, emphasizing the role of the modern/colonial capitalist world system (Grosfoguel, 2002), and related to onto-epistemology in creating and maintaining global problems. In this presentation we investigate what lesser-known lines of humanistic tradition and decolonial thinking await our examination and perhaps open new horizons of action and research.

Keywords: Global crises, Anthropocentrism, Aristotelian humanism, Modern/colonial world system, Decolonization

References

- Andreotti, V., Stein, S., Sutherland, A., Pashby, K., Susa, R., & Amsler, S. (2018). Mobilising Different Conversations about Global Justice in Education: Toward Alternative Futures in Uncertain Times. *Policy & Practice: A Development Education Review*, 26(Spring), 9–41.
- Bacchi, C. (2009). *Analysing Policy: What’s the problem represented to be?* Pearson Education.
- Grosfoguel, R. (2002). Colonial difference, geopolitics of knowledge, and global coloniality in the modern/colonial capitalist world-system. *Review*, 25(3), 203–224.
- Hietajärvi, J. (2022). *Ihmisyden ytimessä*. Gaudeamus.
- Radnitzky, G. (1970). *Contemporary schools of Metascience I-II: Anglo-saxon schools of Metascience, continental schools of Metascience* (2nd ed.). Akademiförlag.
- von Wright, G. H. (1971). *Explanation and Understanding*. Routledge and Kegan.

Constructing technological knowledge together – Elementary school students tutoring coding and robotics to young learners

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The Piagetian view of children as constructors of their own knowledge and taking information from the people and objects in their environment (Aubrey & Riley, 2016) is seen as relevant in learning coding and robotics. At the same time, constructivism and constructionism are seen as the foundation of the robotics education (Jung & Won, 2018). On his works, Papert (1980) added hands-on learning and experimenting with computers and robots to Piaget's theories. Also, Kolb saw learning as a process where knowledge is created through transformation of experience (Kolb, 1984).

In this study, these learning theories form a basis for learning coding and robotics. The study investigates how young learners' (pre-primary schoolers and first graders aged 5 to 7 years) technological knowledge is developing when working together with older children in coding and robotics tasks. In the study, fourth and fifth graders (10–12-year-old children) tutor young learners in practical hands-on coding and robotics tasks.

The study conducts as a part of the *Digikummi* (in English *Digital tutor*) development project. The *Digikummi* project integrates programming competence, media literacy and digital competence in different subjects across primary education in the municipality of Ilmajoki in Finland. The fundamental idea in the *Digikummi* project is to educate students on all levels of primary education to teach digital skills to peers. The project functions under the Ministry of Education and Culture's *The New Literacies* project. Due to the developing approach in the *Digikummi* project, this study uses action research as a method with ethnographical features. The teacher working in the *Digikummi* project develops coding and robotics intervention that the fourth and fifth graders (n=35) teach to young learners (n=30). The data will be collected with standardized pre-posttests that measures technological knowledge. The expected results are set to advance teaching coding and robotics to young learners and broader to benefit young learners' technology education.

Keywords: Coding and robotics, Technology education, Tutoring

References

- Aubrey, K. & Riley, A. (2016). *Understanding & using educational theories*. Sage.
- Jung, S. E., & Won, E. (2018). Systematic Review of Research Trends in Robotics Education for Young Children. *Sustainability*, 10(4), 905. <https://doi.org/10.3390/su10040905>
- Kolb, D. A. (1984). *Experiential Learning: Experience as the source of learning and development*. Prentice Hall.
- Papert, S. (1980). *Mindstorms*. Basic Books.

The political dimension of education for democracy

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There is currently a revitalization of the relationship between the democratic society and education for democracy, due to the constant threat western democracies seem to face with regard to, among other things, information warfare, polarization and autocratic forces. The recent curriculum renewal in Norway, for example, highlights democracy and citizenship as an interdisciplinary subject permeating Norwegian education. This revitalization rests on the interplay between pedagogical theories on education and *bildung* on the one hand, and political theories on democracy and citizenship on the other. This interplay is nevertheless left implicit in much of the didactical field.

This paper is a theoretical contribution arguing the need to make explicit how one balances pedagogical and political perspectives on democratic education. The text particularly addresses one direction which, while emphasizing the pedagogical rather than the political, tends to assume that democratic experiences are pedagogical in and of themselves. The challenge of this perspective is that the pedagogical vocabulary in of itself makes it difficult or impossible to contest the hegemonic status of deliberative or liberal conceptions of the citizen as an individual capable of reasoning in a public sphere, even though this is just way of understanding political subjectivities.

This article discusses different conceptions of political subjectivities in education, problematizing the assumption that experiences in everyday school life can necessarily be democratic. If one conflates concepts such as *bildung* with democratic subjectivities, one has to make explicit what kind of citizenship or democracy this would entail. Although several attempts have been made at incorporating radical democratic theories inspired by Jacques Rancière or Chantal Mouffe, one still seems trapped in a deliberative and liberal understanding of democratic citizenship as something concerning the individual rather than belonging to the collective. The following research question will guide this discussion: Can educational theories on *bildung* and education be used to form radical democratic subjects without limiting oneself to the horizon of deliberative democracy?

Keywords: Political subjectification, Agonism, Radical democracy

References

- Biesta, G. (2011). The Ignorant Citizen: Mouffe, Rancière, and the Subject of Democratic Education. *Studies in Philosophy and Education*, 30, 141–153. <https://doi.org/10.1007/s11217-011-9220-4>
- Heldal, J. (2021). Hva er demokratisk medborgerskap? – Om myndiggjøring og politisering. In L. T. Hilt & L. P. S. Torjussen (Eds.), *Grunnspørsmål i pedagogikken* (pp. 245–260). Fagbokforlaget.
- Laclau, E. (2005). *On populist reason*. Verso.

Advertising literacy to teacher education

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This research suggests that the educational field has a growing need to address advertising literacy in teacher education. Due to digitalisation and datafication, pupils encounter more advertising, commercialised media, and consumerist worldviews than ever before. As the ability to acquire media literacy is linked to pupils' socio-economic background (Lissens & Bauwens, 2017), educational systems should level pupils' skills in analysing and understanding advertising at a cognitive level. Teaching the ability to delineate both negative and positive aspects of advertising manifests the perhaps Kantian take of this research on Bildung (Kontio, 2012), which is here defined as the process of intellectual maturation and cultural agency of an individual. Thus in this research advertising literacy is considered part of education, Erziehung, which again is a prerequisite for Bildung (Deci & Gagne, 2005).

The aim of this presentation is to examine how teacher education could equip pre-service subject teachers with the necessary motivation and tools needed in teaching advertising. It will introduce a sub-study which maps English pre-service subject teachers' views on their skills and motivation to teach advertising literacy. The data were collected using semi-structured interviews (N=14) and analysed using qualitative content analysis method. Conducting the interviews took place after an advertising literacy teaching experiment, which was incorporated in supervised basic practice. The experiment involved four training sessions on how to teach advertising, applying principles of intrinsic motivation theory and pedagogy (Vansteenkiste et al., 2004). During the experiment, the English pre-service subject teachers planned and devised three to four lessons focusing on various aspects of teaching advertising literacy to eighth and ninth graders. The presentation will concentrate on the preliminary results based on the semi-structured interviews.

Keywords: Advertising literacy, Supervised teacher training practice, Intrinsic motivation

References

- Gagné, M., & Deci, E. L. (2005). Self-Determination Theory and Work Motivation. *Journal of Organizational Behavior*, 26, 331–362.
- Kontio, K. (2012). *Nature and Bildung in Jean-Jacques Rousseau's educational thinking. A study on Émile* [Doctoral diss.]. Acta Univ. Oul. E 128. University of Oulu, Finland.
- Lissens, S. K., & Bauwens, J. R. (2017). A Consideration of the Needs, Opportunities, and Challenges for a Critical Advertising Pedagogy. In J. F. Hamilton, R. Bodle, & E. Korin (Eds.), *Explorations in Critical Studies of Advertising* (pp. 179–192). Routledge Research in Cultural and Media Studies. Routledge.
- Vansteenkiste, M., Simons, J., Lens, W., Sheldon, K. M., & Deci, E. L. (2004). Motivating Learning, Performance, and Persistence: The Synergistic Effects of Intrinsic Goal Contents and Autonomy-Supportive Contexts. *Journal of Personality and Social Psychology*, 87(2), 246–260.

Students' beliefs about the role of previously learned languages in the German subject

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In the encounter with the German subject, Norwegian school students can be defined as multilingual since they have already learned at least Norwegian and English (NDET, 2019). The students should be able to benefit from this, but to do so, it may be crucial that they are made aware of what they know about languages and language learning (Haukås & Speitz, 2018, p. 56). Teachers report drawing on the students' Norwegian and English knowledge, but they are not sure how to employ multilingual lesson plans systematically (Myklevold, 2022). However, there is little research on students' perceptions of this matter (Haukås et al., 2022). Hence, this study aims to explore students' beliefs about multilingualism and the role of previously learned languages when learning German:

1. Do the students perceive themselves as multilinguals?
2. Do they view multilingualism as a resource in the acquisition of German?
3. To what extent do the students experience that German is taught in a cross-linguistic perspective?
4. To what extent do the students believe that a cross-linguistic approach to the acquisition of German makes learning more effective and meaningful?

To answer these questions, upper secondary school students were recruited to a mixed-methods study consisting of a questionnaire (N=109) and semi-structured interviews (N=10). Preliminary results show that most students perceive themselves as multilingual, but they do not necessarily view this as a resource in the acquisition of German. The students report that the teachers draw on their Norwegian and (to a lesser degree) English knowledge, whereas additional home languages are seldom addressed. Most students find comparing German to Norwegian helpful, but there is also the perception that previously learned languages do not matter because "everything has to be learned from scratch" when acquiring German.

Keywords: Students' beliefs, Foreign languages, Multilingual pedagogy

References

- Haukås, Å., & Speitz, H. (2018). Flerspråklighet og språkfagene i skolen. In C. Bjørke, M. Dypedahl, & Å. Haukås (Eds.), *Fremmedspråksdidaktikk* (pp. 49–64). Cappelen Damm Akademisk.
- Haukås, Å., Storto, A., & Tiurikova, I. (2022). School students' beliefs about the benefits of multilingualism. *Journal of Multilingual and Multicultural Development*, 1–14. [10.1080/01434632.2022.2075001](https://doi.org/10.1080/01434632.2022.2075001)
- Myklevold, G. A. (2022). *Operationalizing multilingualism in a foreign language classroom in Norway: opportunities and challenges. Educational Implications of Classroom-based Research on Teaching Foreign Languages in Multilingual Settings*. Multilingual Matters.
- Norwegian Directorate for Education and Training (NDET) (2019). *Curriculum for Foreign Languages*. <https://www.udir.no/lk20/fsp01-02?lang=eng>

Promoting probes, toolkits and prototypes in design education with higher education craft students

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The focus of learning design is nowadays shifting more and more on collaborative learning methods instead of simply emphasizing the individual-oriented ones (Sanders & Stappers, 2014). In design education focused on user-centered design methods, various methods based on collaborative design methods have recently been developed as part of the higher education pedagogy in craft teacher training (Kärnä-Behm, 2016; 2019; 2022).

In my presentation, I analyse projects related to the development of user-centered design methods that took place during the courses of the craft teacher's training. The aim of the projects for the students has been to become familiar with various design methods, to understand the design process and the specifics of instructing ones, to be able to produce and utilize material that supports the design process and learn to apply appropriate learning methods when teaching design. Many of the design methods have taken their place as part of interior design studies.

The probing method as a user-centred analysis of a space promoted the student to analyse the degree of functional comfort as well as the environmental barriers or stress in the future users' environment. In the Teaching design course, the students learned how to create physical or virtual *toolkits* to get user knowledge from beforehand-imposed design assignments. Materialization, like scale models and multisensory spaces, has been unified when using *prototypes* as physical manifestations of ideas or concepts in design. In presentation, the outcomes of the projects as well as their applicability reflected by the students in craft education are analysed.

Keywords: Design education, Design methods, Craft

References

- Kärnä-Behm, J. (2016). Promoting design probes in interior design and in the user-centred analysis of a space in the context of Finnish higher education. *Art, Design and communication in higher education*, 15(2), 175–189.
- Kärnä-Behm, J. (2019). Experiencing a space: Applying experiential methods to support the learning of art and design. *International Journal of Education through Art*, 15(3), 281–295.
- Kärnä-Behm, J. (2022). Learning Generative Design Methods. Higher Education Students Developing Toolkits. *International journal of art & design education*, 41(4), 577–588.
- Sanders, E., & Stappers, P. (2014). Probes, toolkits and prototypes: Three approaches to making in Codesigning. *CoDesign*, 10(1), 5–14.

Craft-art object as a medium according to higher education students of craft

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Craft is required in the making of many artifacts, but craft products can also have independent expressive and artistic significance. The expression contained in crafts appears both in recent research on crafts as well as in views on educational policy connected to crafts. According to the Finnish National Curriculum, craft is defined as a multi-material subject in which activities based on expression, design and technology are carried out (FNBE 2014, p. 497). Pöllänen (2009) argues that craft as self-expression is based on holistic craft and the object made in that context can be defined as craft-art (Karppinen, 2008; Pöllänen, 2009).

The expressiveness of craft can, however, bump into problems from the starting points of the art world. An English artist, Grayson Perry, who is using craft techniques in his works, has, for example, pointed out that it was much easier for the art world to accept the fact that he is a transvestite than that he makes pots. The art world watches its borders carefully and doesn't like when "ordinary pots" are called art, says Perry (<https://yle.fi/a/3-10153522>). It is found out that from the point of view of expression, the practicality and need-oriented nature of the craft can be perceived problematic (Vilkman, 2021).

The empirical study connected to the presentation examines the meanings associated to art-craft objects (artworks) by craft teacher students in *The Softy* exhibition in Helsinki Art Museum. The data consists of literal interpretations given by the students of the chosen artworks. The study examines meanings attached to the artworks with content analysis as well as discourse analysis methods.

Keywords: Craft, Art, Expression

References

- Finnish National Board of Education (FNBE). (2014) '*Perusopetuksen opetussuunnitelman perusteet*' (National Core Curriculum). Available at: http://www.oph.fi/download/139848_pops_web.pdf
- Karppinen, S. (2008). Craft-art as a basis for human activity. *International Journal of Art & Design Education*, 27(1), 83–90.
- Pöllänen, S. (2009). Contextualising craft: Pedagogical models for craft education. *International Journal of Art and Design Education*, 28(3), 249–260.
- Vilkman, B. (2021). "I only want to make quality, skillfully executed and sustainable products." *Discursive analysis of the meanings that craft teacher students associate with craft expression* [Unpublished Master's Thesis of Education, University of Helsinki].

Personal interest in reading – the individuality and conditionality of reading in Mother tongue and literature curriculum

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The national core curriculum for Finnish basic education changed in 2014 (POPS 2014). In this core curriculum, mentions about 'interest' and 'enthusiasm' were increased significantly in comparison to the earlier curriculum. In this presentation, we analyse this trajectory by focusing on the Mother tongue and literature curriculum in the core curriculum (POPS 2014). The analysis draws from Carol Bacchi's discourse analysis method for policy. We analyse how POPS 2014 defines 'interest' and drawing on Bacchi's method, we ask the question 'what is the problem represented to be'.

The analysis shows that in different school subjects, 'interest' serves different functions. In Mother tongue and literature, and especially in reading, building an 'interest' is curricular content. Moreover, 'interest' is employed as a rationale for delimiting curricular contents. Instead of schoolwork and practice, the focus is on building positive attitudes towards reading. Thus, the problem, as represented in curriculum, is that the school subject of Mother tongue and literature is unfitting to the pupils. The curriculum offers a solution of invigorating a teaching style which leads to pupils' personal interest towards reading. We suggest that POPS 2014 constructs 'interest' as individual, bypassing dimensions of social difference. Therefore, by focusing on interest, the skills in reading are also individualized. This problematizes educational objectives in basic education.

The presentation is given in Finnish.

Keywords: Reading skills, Mother tongue and literature, Curriculum

References

Bacchi, C. (2009). *Analysing Policy: What's the problem represented to be?* Pearson Australia.

POPS 2014 = Opetushallitus 2014. Perusopetuksen opetussuunnitelman perusteet 2014. Finnish National Agency for Education.

https://www.oph.fi/sites/default/files/documents/perusopetuksen_opetussuunnitelman_perusteet_2014.pdf

Meaningful history teaching in Swedish middle school

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How do students create meaning from the history taught in Swedish elementary school (year 4–6)? In an ongoing project, five classrooms are observed in an attempt to analyze how students construct meaningful understandings from the history mediated by school and shed light on the role that the past and the subject of history play in contemporary elementary education.

The study has an ethnographic approach (Hammersley & Atkinson, 2007), in which participatory observations, interviews, and informal conversations serve as important data. Teaching materials, student texts, and classroom assignments are also collected for analysis to illuminate the different uses of the past (Olofsson 2011; 2019). The focus is the students' voices, however, to contextualize how they construct narratives in relation to the content being taught, there is an additional interest in the teachers' actions and expressions while teaching. Middle school students' understanding of history has previously been investigated by several researchers (Hartsmar, 2001; Johansson, 2019; Levstik & Barton, 2008; Sandberg, 2018).

My study provides new knowledge based, among other things, on the selection of student groups which involves more diverse, multicultural ones. Preliminary results show how both cognitive and emotional aspects are important for students' meaning-making of history, and how the teachers add moral purposes to their interpretations of the textbooks, resulting in a dark picturing of the past among their students.

Keywords: History teaching, History education, Middle school, Classroom observations

References

- Hartsmar, N. (2001). *Historiemedvetande: Elevers tidsförståelse i en skolkontext*. Malmö högskola.
- Johansson, P. (2019). *Lära historia genom källor: undervisning och lärande av historisk källtolkning i grundskolan och gymnasieskolan* [Doctoral diss.]. Institutionen för de humanistiska och samhällsvetenskapliga ämnena didaktik, Stockholms universitet.
- Levstik, L. S., & Barton, K. C. (2008). *Researching history education: theory, method, and context*. Routledge.
- Olofsson, H. (2011). *Fatta historia: En explorativ fallstudie om historieundervisning och historiebruk i en högstadielklass*. [Licentiate thesis]. Karlstad University.
<http://urn.kb.se/resolve?urn=urn:nbn:se:kau:diva-7359>
- Olofsson, H. (2019). *Historia på högstadiet: Historiekulturella yttringar i och utanför ett klassrum i Sverige hösten 2009*. [Doctoral diss.]. Karlstad University.
<http://urn.kb.se/resolve?urn=urn:nbn:se:kau:diva-74739>
- Sandberg, K. (2018). *Att lära av det förflutna: yngre elevers förståelse för och motivering till skolämnet historia*. [Doctoral diss.]. School of Education, Culture and Communication, Mälardalens högskola.

Music teachers' conceptions of music teaching in the Swedish Special-needs Compulsory School: a phenomenographic study

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Anna Backman Bister, Royal College of Music in Stockholm, Sweden

The aim of the study was to investigate teachers' conceptions of music teaching in the Swedish *grundskolan*, Special-needs Compulsory School (SnCS) for children with intellectual disabilities in order to discern indications of common characteristics of their music teaching practices.

According to the result of a previous review (Berthén et al., 2022) of international research focusing music teaching for students with intellectual disabilities (ID), such studies either are based on 1) integrated classrooms – mixed groups of students; 2) music therapy, studies based on individual children; or 3) norm critical studies related to admission requirements or to musical production.

Since the 1990s, reforms have contributed to changing the conditions for SnCS: 1) the change of the political object for SnCS from caring to teaching; 2) the national curriculum from 2011 introduced assessment criteria; and 3) new qualification requirements for all teachers in SnCS were introduced. However, for several years, few music teachers within SnCS are qualified music teachers: during the school year 2020–2021 this share was 6.3 percent. UN's Conventions on 1) the Rights of the Child, and 2) the Rights of Persons with Disabilities are legal foundations for this curriculum. In relation to music teaching this means that also students with ID must have access to the aesthetic meaning that musical experiences can contribute with as well as its transformative power that Carlson (2015) labels as musical becoming.

Against this backdrop, the overarching research question we pose for this paper is the following: What characterises music teachers' conceptions of music teaching in SnCS?

This study is based on qualitative interviews with six music teachers in SnC schools from various regions in Sweden. Data were analysed phenomenographically (Marton, 1994) and the result will be presented as an outcome space consisting of interrelated categories of description.

Keywords: Music teaching, Intellectual disabilities, Musical

References

- Berthén, D., Backman Bister, A., & Lindberg, V. (2022). Musikundervisning för grundskolan? – en forskningsöversikt. *Nordic Research in Music Education*, 3, 21–50.
<https://doi.org/10.23865/nrme.v3.3729>
- Carlson, L. (2013). Musical becoming: Intellectual disability and the transformative power of music. In M. Wappett & K. Arndt (Eds.), *Foundations of disability studies* (pp. 83–103). Palgrave Macmillan.
- Marton, F. (1994). Phenomenography. In T. Husén & T. N. Postlethwaite (Eds.), *The International Encyclopedia of Education* (2nd ed., vol. 8., pp. 4424–4429). Pergamon.

Developing safety education through safety notice reporting – A perspective into comprehensive education students' safety competence and authentic observations

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Safety is an element of safety culture and safety education (Jin & Tu, 2020). Safety culture is portrayed through a plethora of activities and measures in which the entire community takes part, which promote the safety and well-being of students and staff in learning environment, in and outside the school or on the way to and from school (Leino & Lindfors, 2021). Safety education is a combination of values and attitudes wherein safety is considered important and unnecessary risks are not accepted (Somerkoski et al., 2019).

The aim of safety education is to develop knowledge of proactive and reactive safety measures and procedures, combined with skills, and a will to act safely in an authentic situation. (Lindfors, 2023). Students' role in reporting is vital because school safety culture is to a large degree about what schools know about their safety and how they monitor safety observations. In order to recognise timely topics on safety education in comprehensive education, our study asks: What kind of safety observations do comprehensive education students consider worth filing when using an online safety reporting form?

The data consist of safety notice reports between November 2022 and March 2023. The safety notices have been collected using an online form accessed through a web-application. Safety notices can concern events and observations made by the reporting individual or be made on behalf of another in order to keep the reporting threshold low. In our presentation we report how we have classified the safety incident reports filed by students and consider what these findings suggest in terms of students' safety competence. In this sense the reports convey information on the learners' safety competence: learners report what they consider worthwhile. Examining students' safety notice reports as expressions of school safety culture benefits safety education by offering a timely picture of students' real-world safety issues and give practical examples what issues are important to address in teaching safety (Gahungu, 2018).

Keywords: Safety education, Safety notice reporting, Comprehensive education

References

- Gahungu, A. (2018). Indiscipline and safety in public schools: Teachers and principals at odds. *International Journal of Research in Education and Science (IJRES)*, 4(2), 375–390. 10.21890/ijres.409267
- Jin, G., Nakayama, S., & Tu, M. (2020). Game based learning for safety and security education. *Journal of Education and Learning (EduLearn)*, 14(1), 114–122. doi:10.11591/edulearn.v14i1.14139
- Leino, M., & Lindfors, E. (2021). Safety Culture in Craft, Design and Technology Workshops – An analysis of safety documents in teacher education. *Technology in our hands. Creative pedagogy and ambitious teacher education. Techne Series A*, 28(2), 332–339. <https://journals.oslomet.no/index.php/techneA/article/view/4358/3842>
- Lindfors, E. (in print, 2023). Safety, Risk and Learning. How to master a risk and safety in Technology education learning and working environments. In D. Gill, D. Irwing-Bell, & D. Wooff (Eds.), *Handbook of Technology Education*. Bloomsbury Publishing.

Somerkoski, B., Kärki, T., & Lindfors, E. (2019). Learning Outcomes: Safety Education for Comprehensive School Pupils. *European Journal of Social and Behavioral Sciences*, 26, 3009–3020.
<https://doi.org/10.15405/ejsbs.262>

Achievement goal orientations in a fifth and sixth grade collaborative hands-on technology learning task

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Most activities depend on the use of technology and technological processes. It is therefore important to examine technological literacy and students' interest to learn and use it. Technological literacy is a part of the craft, design and technology education subject (Crafts) and STEAM education in Finnish Core Curriculum for Basic Education (2014). However, girls in particular have been found to feel unsure of themselves with technology and are cautious in proceeding with technology-related tasks at school.

This study examines achievement goal orientations (AGO), an individual's attitudes towards and expectations of their performance, in technology learning workshops in Finnish comprehensive education grades five and six. The aim is to contribute to existing knowledge on AGOs as 11 to 12-year-old students solve collaborative hands-on learning tasks while using electrical automation learning tool-kits. The study asks: 1) Are there any changes in students' AGOs during a learning task? and 2) What factors are seen as connected with the change of AGOs? Special attention has been paid to possible differences between boys and girls.

In the task presented to learners, the students worked in groups of two to three. Altogether 22 students (11 boys and 11 girls) in ten groups participated in the workshop. The 15 hours of video recordings were transcribed and analyzed according to theory-driven content analysis. Facial expressions and signs were accounted for in the analysis. Each students' AGOs were analyzed individually.

Differences in AGOs were found in the beginning, middle and at the end of the learning task. The AGOs of girls were somewhat more positive than the boys' in the beginning and at the end of the task. For teachers, it is important to recognize students' AGO in order to support learners according to their needs. Teachers should also observe changes in students' goal-orientations during a learning task to fuel students' motivation and support the development of their technological literacy.

Keywords: Achievement goal orientation, Technological literacy, Comprehensive education

References

- Dweck, C. S. (2017). From Needs to Goals and Representations: Foundations for a Unified Theory of Motivation, Personality, and Development. *Psychological Review*, 124(6), 689–719. <https://doi.org/10.1037/rev0000082>
- Lerang, M. S., Ertesvåg, S. K., & Havik, T. (2019). Perceived classroom interaction, goal orientation and their association with social and academic learning outcomes. *Scandinavian Journal of Educational Research*, 63(6), 913–934. <https://doi.org/10.1080/00313831.2018.1466358>
- Lindfors, E., Lundberg, A., & Kuusisto, S. (2021). Students' Goal Orientations During a Pedagogical Innovation Process: A Study in Craft, Design and Technology Teacher Education. *Techne Series: Research in Sloyd Education and Craft Science A*, 28(2), 221–232. <https://journals.oslomet.no/index.php/techneA/article/download/4381/3852>

Pirhonen, A. (2021). Promoting Technological Thinking: The Objective and the Means. *Techne Series: Research in Sloyd Education and Craft Science A*, 28(2), 48–53.

<https://journals.oslomet.no/index.php/techneA/article/view/4326>

Tapola, A., Jaakkola, T., & Niemivirta, M. (2014). The Influence of Achievement Goal Orientations and Task Concreteness on Situational Interest. *The Journal of Experimental Education*, 82(4), 455–479.

<https://doi.org/10.1080/00220973.2013.813370>

Student Exam Papers from 1968. Shaping the Course of a Subject

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The history of the subject Danish in the Danish upper-secondary school (gymnasium) is often told analysing notions of knowledge as skills and competences in historical reforms, policies, curricula, and textbooks. Sometimes, examples from student papers are used as illustrations of pedagogical, cultural, or political changes (Engstrøm, 2003; Jakobsen & Thybo, 2008). Referring to Koselleck (2004), the project “Knowledge and Learning in the Danish Gymnasium” is based on the following hypotheses: a) the subject, as it emerges in the assignments, takes form through an ongoing negotiation between teacher, censor and students, b) the assignments are expressions and negotiations of the boundaries of the disciplines. The research project therefore tells the story of the emergence of the subjects by analysing student exam papers from 1915 up to the present (cf. Ljungdalh & Qvortrup, 2022).

In the paper, we analyse student papers from 1968, focusing on their responses to the topic “Social distinctions and prejudices in Denmark”, i.e., how they made use of authoritative facts and advice from their textbooks to discuss this topic. By using the linguistic, dispositional and stylistic recommendations offered in the textbooks on writing, the students were invited to investigate such questions as inequality and discrimination, status and class as well as cultural norms referring to societal, political and educational structures and with historical, international, religious, theoretical and literary contextualisations. They did so by using relevant information from their textbooks (social science and Danish literature) to construct various arguments on contemporary problems concerning political, social, and economic organisation. The student papers not only passively reflect but are part of the ongoing constitution of the subjects and subject matter, during a period of tremendous didactical change.

Keywords: History of education, Student exam papers, Danish upper-secondary school

References

- Engstrøm, C. (2003). *Dansk Skrivepædagogisk historie i den lærdede Skole 1775-1903* [Doctoral dissertation, Syddansk Universitet].
- Jakobsen, I. T., & Thybo, C. (2008). Gymnasiet i første halvdel af 1900-tallet. In H. C. Hansen et al. (Eds.), *Matematikundervisningen i Danmark i 1900-tallet* (pp. 499–556). Syddansk Universitetsforlag.
- Koselleck, R. (2004). *Futures past. On the Semantics of Historical Time*. Columbia University Press.
- Ljungdalh, A.K., & Qvortrup, A. (2022). At lære at ræsonnere – danske eksamensbesvarelser fra studentereksamen 1995. *Uddannelseshistorie*, 56, 185–218.

What constitutes powerful knowledge in religious education?

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What should the goal of religious education in Swedish secondary schools be? Is the goal of religious education that students be able to explain religious beliefs and behavior? Or is it to understand religious beliefs and behavior? I argue that these two goals are quite different and largely incompatible.

In this paper, I will argue that religious education should find its place among the interpretative humanities rather than the social sciences. In line with the fundamental values and tasks listed in the curriculum for the upper secondary school in Sweden, religious education “should promote understanding of other people and the ability to empathise. Instruction must be characterized by openness and respect for differences between people” (Skolverket 2022, Lgr22, my translation).

While Michael Young and Johan Muller (2013) present approaches used by the natural sciences as a template for all disciplines, not all disciplines have at their basis the form of knowledge that characterizes the natural sciences. Scholars today often seek to explain religious beliefs and behavior using cognitive science; if used in secondary schools such an approach risks portraying religious behavior as ultimately based on delusions and misunderstandings. Such an approach is not respectful of religious practitioners and does not contribute to understanding any individual religion. To better fill the task of religious education, schools should rather be inspired by instruction in literature as described by Robert Eaglestone (2021). Rather than being presented with a seemingly impartial and objective scientific approach to religion, students should be exposed to a variety of interpretations of the religions they study and the internal logic that lies behind these interpretations.

Keywords: Religious Education, Powerful knowledge, Interpretative humanities

References

- Eaglestone, R. (2021). ‘Powerful knowledge’, ‘cultural literacy’ and the study of literature in schools. *Impact*, 26, 1–41.
- Franck, O. (2021). Gateways to Accessing Powerful RE Knowledge: A Critical Constructive Analysis. *Journal of Religious Education*, 69, 161–174.
- Young, M., & Muller, J. (2013). On the Powers of Powerful Knowledge. *Review of Education*, 1, 229–250.

¹ ”Skolan ska främja förståelse för andra människor och förmåga till inlevelse. Utbildningen ska präglas av öppenhet och respekt för människors olikheter.” (Lgr22)

On congruence between what students see as generally important and personally interesting in learning history: results from a pilot study

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In the paper are reported the results of a pilot study, where 77 Finnish Grade 8 students answered a questionnaire and, in a Likert scale, expressed how much they considered that specific activities in the history classroom are generally important or personally interesting. There are studies where students have been asked how interesting they find history as a school subject but in those studies attention has often not been given to students' criteria for history as "interesting". In this study an instrument is tested that distinguishes between students' judgment of the general importance and personal appeal of a specific history classroom activity. The aim was to see how much congruence there is between the perceived general importance and personal interest of an activity to students and, further, how students' personal interests meet what the formal history curriculum offers. The classroom activities in the questionnaire were, for example, the following:

- To reflect what deeds have been good and evil in history.
- To consider on the basis of history what may happen in the future.
- To discuss in what different ways knowledge about the past can be acquired.

An exploratory analysis was carried out, with focus on the numerical mean value of the students' answers and the correlation between their view on the general importance and personal interest of each specific activity. Attention was paid only to the extreme values, given the methodological limitations. The result is that the general importance and personal interest of the given activities converge clearly in the answers but there are differences in the mean value of the students' view of the general importance and personal interest of some activities, and these cases are discussed in the paper, also in relation to what the Finnish history curriculum offers.

Keywords: Students, History teaching, Interest in history

References

- Berg, C. (2019). Why study history? An examination of undergraduate students' notions and perceptions about history. *Historical Encounters*, 6(1), 54–71.
- Harris, R., & Haydn, T. (2006). Pupils' enjoyment of history: what lessons can teachers learn from their pupils? *Curriculum Journal*, 17(4), 315–333.
- Löffström, J., Ammert, N., Edling, S., & Sharp, H. (2020). Can, and should history give ethical guidance? Swedish and Finnish Grade 9 students on moral judgment-making in history. *Nordidactica*, 10(4), 88–114.
- Moisan, S., Zanazanian, P., & Maltais-Landry, A. (2020). Enseigner l'histoire de son pays. In N. Fink, M. Furrer, & P. Gautschi (Eds), *The teaching of the history of one's country. International experiences in a comparative perspective* (pp. 207–232). Wochenschau.
- Nuttall, D. (2021). What is the purpose of studying history? Developing students' perspectives on the purposes and value of history education. *History Education Research Journal*, 18(1), 89–108.

Gamification in the development of mathematical thinking

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Over the past ten years, the IEA's Trends in International Mathematics and Science Study (TIMSS) has shown a downward trend in the mathematics skills of Finnish 4th and 8th graders. The PISA results indicate a similar trend. The most recent evidence for the scale of the problem is found in a study conducted by the Finnish Education Evaluation Centre in spring 2021, where the results revealed not only a decline of mathematical competence but also a significant increase in level of skills differences.

In my doctoral dissertation, I aim to find new ways to address challenges outlined. The aim of the present research-project is to develop a gamification-based pedagogical model that can be used to design more varied mathematical tasks. The mathematical tasks developed with this model will support formative assessment, collaborative learning, and teamwork skills, allowing more learning-by-doing approach to learning mathematical concepts. Typical tasks presented in mathematics textbooks are most often routine-like and develops only students' procedural fluency. In my research project, I aim to diversify mathematical tasks by using game-like elements, such as rules, sub-goals and game mechanics, which leads in experimenting with different methods when finding solutions to given tasks. Thus, instead of designing games per se, the pedagogical model will guide to the diversification of mathematical tasks in order to develop mathematical thinking.

The benefits of gamification are often presented only in terms of its motivating and engaging effects. In my research, I therefore emphasise the use of gamification in designing more varied activities, enabling the formation of meaning relationships towards new mathematical concepts and creating an interactive learning process. This study uses an educational design research approach (EDR) in developing the pedagogical model and testing it in a classroom environment.

Keywords: Educational design research, Gamification, Mathematical thinking

References

- Huotari, K., & Hamari, J. (2012). *Defining gamification: A service marketing perspective*. Proceeding of the 16th International Academic MindTrek Conference, Tampere, October 3–5, 2012 (pp. 17–22).
- Joutsenlahti, J., & Lehtonen, D. (2018). Luokanopettajaopiskelijoiden arviointeja ei-rutiinimaisista matematiikan tehtävistä. *FMSERA Journal*, 2(1), 89–98.
- Kupari, P., Välijärvi, J., Andersson, L., Arffman, I., Nissinen, K., Puhakka, E., & Vettenranta, J. (2013). *PISA12 ensituloksia*. Opetus- ja kulttuuriministeriö julkaisuja.
- Metsämuuronen, J., & Nousiainen, S. (2021). *Matematiikkaa Covid-19 pandemian varjossa. Matematiikan osaaminen 9. luokan lopussa keväällä 2021*. Karvi, Julkaisut 27: 2021.
- Vettenranta, J., & Harju-Luukkainen, H. (2013). *A New way of recognizing the spatial distribution of educational issues: Regional variation of science literacy in the Finnish TIMSS 2011 data*. The 5th IEA International Research Conference (IRC-2013). International Association for the Evaluation of Educational Achievement. http://www.iea.nl/fileadmin/user_upload/IRC/IRC_2013/Papers/IRC-2013_Vettenranta_Harju-Luukkainen.pdf Open Access

The beautiful risk of ESD in traditional subject-oriented teaching

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The concept of sustainability is interdisciplinary, complex and an object of interpretations (cf. Jickling & Wals, 2012), and therefore not easy to operationalize in a subject-oriented school context. This indicates (at least) two ways of understanding; issues of sustainability need to be sorted out and dealt with in the existing school subjects *or* traditional organization of school subjects needs to be re-considered in relation to the character of sustainable development (Bokova, 2015). Re-thinking traditional forms of education includes risk but also new possibilities for development (Biesta, 2014), an argument we will here discuss further.

The aim of this study was to investigate what dimensions of sustainability are the main topics of teaching and to what degree teachers use different methods in their practices, i.e., how are the complex and interdisciplinary issues of sustainability dealt with in the traditional school structure?

The data used was collected with a survey year 2019 within one Swedish municipality. Responses from 453 teachers on 40 Likert scale items and 7 open questions were analyzed by means of descriptive statistics and thematic analysis. The questions concerned both dimensions of sustainability and methods used in daily practice, as well as perceived competences and need for professional development within ESD. The purpose was to gain understanding of the educators' perspective, and to identify need for support. For a detailed description of the survey see Manni and Knekta (2022).

The analysis showed substantial differences between teachers at different grades, both with respect to topics of teaching, methods used, and reported needs of professional development. Based on our results we will discuss how ESD might challenge traditional subject-specific teaching; from “objective” forms of knowledge to more “subjective” including holistic and relational approaches, and to initiate a re-thinking of ESD as a possibility and not an obstacle in subject education.

Keywords: Sustainable development, Interdisciplinary teaching, Compulsory school

References

- Biesta, G. (2014). *The beautiful risk of education*. Boulder, Paradigm Publishers.
- Bokova, I. (2015). *Rethinking education – Towards a global common good?* UNESCO.
- Jickling, B., & Wals, A. E. J. (2012). Debating Education for Sustainable Development 20 Years after Rio: A Conversation between Bob Jickling and Arjen Wals. *Journal of Education for Sustainable Development*, 6(1), 49–57. doi:10.1177/097340821100600111
- Manni, A., & Knekta, E. (2022). *Fritidshemmet – en förbisedd potential i arbetet med lärande för hållbar utveckling?* *Nordina: Nordic studies in science education*, 18(1), 63–81.

The content of foreign language instruction: A replication of Tornberg (2000)

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In the article "What is meant by 'content' in language teaching?" (2000), Tornberg highlights the difficulty in answering the question of content in language teaching:

Are the texts the *content* of the teaching? Is it the grammar, words and phrases? Is it the skills training? Or should the question be understood in a broader perspective, so that the content of language teaching consists of everything the student learns about himself and his world *at the same time as he* or she learns a language? (Tornberg, 2000, p. 93; italics in original)

Tornberg based her discussion of the content of language teaching on the curricula Lpo94 and Lpf94, whose description of subject and syllabi only to a limited extent described content. Since Tornberg's study, a comprehensive reform of the Swedish school system has taken place (Lgr11, Gy11, Lpfö18, Lgr22). The study of the content of language teaching therefore deserves to be replicated. What kind of content is written in subject and course plans for the subject of foreign languages (moderna språk) from 2021/2022? And what space is there to fill language teaching with meaning that strengthens the student in his or her learning about himself and the world? In the paper, the foreign language curricula and syllabi from 2011 and 2021/2022 are examined, with the aim of framing the relationship of language teaching to the didactic selection question (Sundberg, 2021, p. 39) and how to arrive at an answer to it. The content analysis of the curricula shows that the answer to the question of the content in Swedish foreign language instruction to a large extent lies in the experiences of the students (Marx Åberg, 2022).

Keywords: Foreign language instruction, Subject content, Curriculum

References

- Marx Åberg, A. (2022). Språkundervisningens innehåll: Tornberg (2000) revisited. *HumaNetten*, (49), 7–17.
- Sundberg, D. (2021). *Svenska läroplaner: läroplansteori för de pedagogiska professionerna*. (1st ed.). Studentlitteratur.
- Tornberg, U. (2000). Vad menas med "innehåll" i språkundervisningen? In P. O. Svedner & C.-A. Säfström (Eds.), *Didaktik: perspektiv och problem*. Studentlitteratur.

Democracy and threats towards it in Finnish social studies textbooks

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Today, threats to democracy are increasing and changing due to polarization and support for anti-pluralist parties (Levitsky & Ziblatt, 2018). Democracy is simultaneously questioned by those advocating for expert rule in times of emergency, ranging from pandemics to climate crisis (Wikforss, 2021). Democracy can be understood narrowly, as merely electoral, and with limited rights, or thicker, as encompassing minority rights, equality and increasing social justice (Näsström, 2021). Another distinction is between democracy as a set of procedures and democracy as an ideology, with increased inclusion of voices from the margin as its goal (Arnstad, 2018).

In Finland, social studies is taught as a subject in the years 4–6 and year 9. Democracy is at the center of two of four content areas within social studies. Based on a discourse theoretical analysis (Laclau & Mouffe, 1985/2001), we ask how democracy is portrayed in Finnish school textbooks in social studies (years 4 to 6 and 9). We find democracy to work as a floating signifier. Discourses portrayed include democracy as procedures, democracy as non-dictatorial government, democracy as a duty, and democracy as imperfect. The textbooks infrequently indicate examples of thicker democracy descriptions. Threats to democracy are rarely conceptualized as an outcome of rightwing populism or calls for expert rule, but as citizens' disregard of their democratic duties. We find this normative, even incriminating approach to active citizenship education (Satokangas & Mikander, forthcoming) as a deviation from the overall explanations of threats to democracy and consider what role the stronger anti-pluralist / rightwing populist parties play in the uneasiness to consider thick descriptions of democracy within social studies education.

Keywords: Social studies, Democracy, Textbooks

References

- Arnstad, H. (2018). *Hatade demokrati: de inkluderande rörelsernas ideologi och historia*. Norstedts.
- Levitsky, S., & Ziblatt, D. (2018). *How Democracies Die: What History Reveals About Our Future*. Viking.
- Laclau, E., & Mouffe, C. (1985/2001). *Hegemony and socialist strategy*. Verso.
- Näsström, S. (2021). *Demokrati: en liten bok om en stor sak* (1st ed.). Historiska media.
- Satokangas, H., & Mikander, P. (forthcoming). From Welcoming Rhetoric to Narrowing One: Constructing Citizen Agency in Finnish Social Studies Textbooks.
- Wikforss, Å. (2021). *Därför demokrati. Om kunskapen och folkstyret*. Fri Tanke.

How does shaping support L1 teachers development of noticing competences

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In an attempt to support quality in L1 teaching in teacher education, we use the Learning to notice (LTN) approach for analyzing video recorded L1 teaching from primary school (Seidel & Sturmer, 2014).

As previous studies demonstrate, student teachers seem to focus primarily on pupils' relational and psychological well-being in the classroom and overlook the L1 subject (Slot et al., 2022). In this study, student teachers' development of subject-specific noticing competences in L1 are explored when video recordings from classrooms are introduced. During the course, the student teachers' reflection and verbal cooperation are supported to enhance noticing of L1 content.

In our study, we are concerned with shaping (Van Es & Sherin, 2021) as part of the noticing approach and especially the dimension that noticing via shaping also implies interaction with the observed. Interaction can be seen appearing in the student teachers' cooperation as a social interaction while watching recordings, for example, students' peer dialogue or dialogue with teacher educators.

We have worked on the basis of the following research question: How do student teachers develop noticing competences connected to theoretical concepts from L1 theory through analyzing video-recorded teaching, when the teacher educator has selected L1 focus and invites to dialogue?

We examine empirical evidence from L1 teaching with 30 student teachers. We have access to 8 groups' written descriptions, audio files with group discussions and 5 video-taped plenary discussions. We have coded them with analytical categories that identify student teachers' articulation of selected L1 concepts as well as statements based on previous statements from fellow students and teacher educators.

We contribute with knowledge on how student teachers in the meeting with specific concepts from L1 theory and dialogues support noticing in video-taped teaching.

Keywords: Noticing, L1, Shaping

References

- Van Es, E. A., & Sherin, M. G. (2021). Expanding on prior conceptualizations of teacher noticing. *ZDM—Mathematics Education*, 53(1), 17–27.
- Slot, M. F., Hjarnø, G., Reng, M., & Moe, C. B. (2022). Learning to Notice og brug af videoptaget undervisning i læreruddannelsen. *Studier I læreruddannelse Og -Profession*, 7(2), 21.
- Seidel, T., & Stürmer, K. (2014). *Modeling and Measuring the Structure of Professional Vision in Preservice Teachers* [Modellering og måling af strukturen af professionel vision hos førskolelærere]. *American Educational Research Journal*, 51(4), 739–771.

Visions of the future of craft education

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Crafts, a subject in basic education, has been able to adapt to many societal changes. Originally, teaching focused on manufacturing household items and developing skills for working, whereas today the focus has shifted on the holistic craft process innovated by the student. However, throughout the times the goal of craft education has been to develop students' self-esteem and productivity, as well as their understanding of materiality and the society. These aims are realized in today's craft curriculum (FNBE 2014) with the concept of multi-material craft. Multi-materiality enables students to utilize various material and production-related resources, making use of both technical and textile work methods (Pöllänen et al., 2021).

The aim of this study is to map out the future directions, priorities and contents of craft education. We examine the future of craft education in reflection of the megatrends published by Sitra in 2020 (Dufva et al., 2020), and re-developed 2023 (Dufva & Rekola, 2023). The data consist of essays of student craft teachers about the future of craft field reflected upon the megatrends: people, power, economy, technology, and nature. The analysis is conducted with NVivo using the qualitative content analysis method. In reflection of the megatrends, we focus on the increase of democracy within networks, diversification of the use of digital technologies, and emphasis laid on the understanding of materiality and ecology through consumption and life cycle thinking. Aging of the population and the state of the world economy are also noticed as growing concerns. Accordingly, it is envisioned that in the future, crafts will tap from new technologies, and combine digital and material elements in learning, interaction and communication in the changing situations of the world.

Keywords: Craft education, Multi-material crafts, Future of craft education

References

- Dufva, M., Hellström, E., Hietaniemi, T., Hämäläinen, T., Ikäheimo, H. P., Lähdemäki-Pekkinen, J., Poussa, L., Soleyjev-Wartiovaara, A., Vataja, K., & Wäyrynen, A. (2020). *Megatrendit koronan valossa*. Sitran selvityksiä 171. Sitra. <https://www.sitra.fi/julkaisut/megatrendit-koronan-valossa/>
- Dufva, M., & Rekola, S. (2023). *Megatrendit 2023. Ymmärrystä yllätysten aikaan*. Sitran selvityksiä 224. Sitra. https://www.sitra.fi/app/uploads/2023/01/sitra_megatrendit-2023_ymmarrysta-yllatysten-aikaan.pdf
- FNBE. (2014). [Finnish National Board of Education]. *Perusopetuksen opetussuunnitelman perusteet*. [National Core Curriculum for Basic Education]. Finnish National Agency for Education.
- Pöllänen, S., Rönkkö, M.-L., Salonen, A., Härkki, T., & Lindfors, E. (2021). Monimateriaalisuus perusopetuksen käsityössä. *Ainedidaktikka*, 5(2), 3–24. <https://doi.org/10.23988/ad.90017>

Sensitive topics and language challenges in culturally diverse geography classrooms – Teachers’ experiences about possibilities and challenges

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This presentation examines geography teachers' experiences and thoughts about the content of geography lessons in the culturally diverse classroom. How do teachers feel about possibilities and challenges in the context of cultural diversity? In my study (Muukkonen, 2018; 2019), a total of six geography teachers from secondary and high schools from the Helsinki metropolitan area, Finland, were interviewed, using a thematic interview approach. The unanimous response was that no culturally or ethnically sensitive topics should be avoided in their classrooms, but such topics should be handled in a sensitive way, by softening, adapting teaching accordingly, and using many sources of information objective references. This is important because some immigrant students might feel uncomfortable about certain topics due to ethnic differences, religious differences, or due to their personal unpleasant experiences. Yet, cultural diversity can also be a possibility. Culturally diverse classroom might enhance the geography teaching if students want to share their experiences and knowledge. Some students do not feel comfortable doing this. Those who are willing to share their experiences can provide valuable enhancements for geography classrooms.

Keywords: Geography, Cultural diversity, Sensitive topics

References

- Muukkonen, P. (2017). Maantieteen oppituntien sisällöt ja niiden käsittely kulttuurisesti moninaisessa luokassa: opettajien kokemuksia mahdollisuuksista ja haasteista. *Terra*, 129(1), 17–27.
- Muukkonen, P. (2018). Maantieteen opettajien opetuskäytännöt kielellisesti moninaisessa luokassa. In R. Rinne, N. Haltia, S. Lempinen, & T. Kaunisto (Eds.), *Eriarvoistuva maailma – tasa-arvoistava koulu?* (pp. 297–328). Jyväskylä, Suomen kasvatustieteellinen seura 78.
- Muukkonen, P. (2019). Olika arbetssätt hos geografilärare i mångkulturella klassrum. *Terra*, 131(3), 165–167.

Geography teachers' views on geomeia and geomeia education

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While geomeia is a new concept in Finnish curricula, it merely describes (in a new way) geographical methods and data that have always been central in geography education. In the latest National Core Curriculum for General Upper Secondary Education 2019 (2020), the term geomeia is defined as a way to collect and present geographical data especially with maps and Geographical Information Systems (GIS). In addition, geomeia consists of also graphs, diagrams, photos, video, news, and statistics that transmit regionally or spatially tied or located information (Muukkonen et al., 2022).

In our study (Hynynen et al., 2022), we interviewed geography teachers on 1) how they understand the concept of geomeia, 2) what is the role of geomeia in their students' everyday lives and how that is reflected in the school education, and 3) what is the impact of geomeia education for geography education in general and for the society. The interviewed teachers work with pupils from ages 7 to 19.

The results show, for example, that most teachers consider geomeia as a useful hypernym at the curriculum level, but understanding of the concept is limited and few teachers utilize the term in the classroom. Outside the classroom, pupils are mainly exposed to visual forms of geomeia and would need stronger skills to examine it critically. The teachers agree that geomeia education forms the basis of methodological geography skills and supports geographical thinking. Finally, geomeia education provides the pupils with skills to use geomeia in their everyday lives and to acquire many relevant skills in the future.

Keywords: Geography, Geomeia, Digitalization

References

- National Core Curriculum for General Upper Secondary Education 2019* (2020). Opetushallitus.
- Hynynen, L., Nylén, T., Hirvensalo, V., Lammi, P., & Muukkonen, P. (2022). Maantieteen opettajien näkemyksiä geomeiasta ja geomeiaopetuksesta [Geography teachers' views on geomeia and geomeia education]. *Terra*, 134(4), 241–252. <https://doi.org/10.30677/terra.120326>
- Muukkonen, P., Hynynen, L., Jäntti, L., & Lammi, P. (2022). Geomeia on keskeinen osa maantieteen opetusta, mutta miksi ja mitä se on? *Terra*, 134(3), 191–193. <https://terra.journal.fi/article/view/121685>

Mathematical Reasoning and Learning of Mathematics

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Practising mathematical skills is not merely a specific talent (for formal game played according to certain formal rules,) but more likely something which need to be understood. For deeper abilities, logic gives a theoretical foundation for mathematical reasoning. Proof theory demonstrates what is formal proof (deduction) and model theory shows how to interpret the formal system (truth). Taking this into account, appearance of mathematical reasoning has accurate and precise origin.

Formulation of mathematical rules consist of two parts: abstract and formal. This knowledge implies that mathematics is independent of the context of (possible) applications. However, deeper understanding of special interest areas in mathematics are extremely sensitive: mathematical notation including symbols are needed to formulate a solution of each, individual, mathematical problem. So, solutions are in a way dissimilar but related in meaning. Therefore, it is not odd that in the philosophy of logic, the subtle transformation of meaning has been systematically studied.

In the presentation, we will focus on the transformation of meanings of mathematical symbols in high school level mathematics. The examples include fraction calculations and polynomial calculations. Our observations show why intuitive interpretation of mathematics might be even misleading and, hence, may cause anxiety about mathematics.

The intention is to show that mathematical thinking is natural to humans, although the reasoning process needs to be presented in a systematic and explicit form as a proof or a mathematical approach in the given task. The instructor's role is to support the learner's ability to show how and in what sense notation and symbols are used in his study work. This type of exercise introduces mathematical practice to the learner. In the presentation, the theoretical foundations are demonstrated by learning examples.

Keywords: Logic, Mathematics, Interpretation, Understanding, Notation

References

- Brodie K. (Eds.). (2012). *Teaching Mathematical Reasoning in Secondary School Classrooms*. Springer.
- Mutanen, A. (2019). On Mathematical Reasoning. In C. Tzanakis, E. Barbin, U. T. Jankvist, T. H. Kjeldsen, & B. Smestad (Eds.), *History and Epistemology in Mathematics Education: Proceedings of the 8th ESU*. Oslo Metropolitan University.
- Shapiro, S. (2002). *Philosophy of Mathematics: Structure and Ontology*. Oxford University Press.
- Tuominen, A. (2021). *Interventiotutkimus kolmasluokkalaisten murtolukujen oppimisesta: "Ylhäällä olevat vain plussataan"*. University of Turku
- Usiskin Z. (2015). What Does It Mean to Understand Some Mathematics? In S. J. Cho (Ed.), *Selected Regular Lectures from the 12th International Congress on Mathematical Education* (pp. 821–841). Springer Cham.

"Aha" and "Hmm" moments in learning about electric circuits in pre-service physics teacher education

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Learning basic concepts of DC circuits is known to be challenging even at the university level. Here we examine the learning instances of pre-service physics teachers as they should be fluent in explaining the functioning of DC circuits at schools. The focus of this study is on learning instances called "Aha" and "Hmm" moments. The "Aha" moments are insights that are sudden moments of understanding something or realization how to move forward from cognitive impasses (Kounios & Beeman, 2009). "Hmm" moments are moments of cognitive impasses or confusion (D'Mello et al., 2014). Both type of moments can be beneficial for learning (D'Mello et al., 2014; Kounios & Beeman, 2009). These moments were identified through content analysis and vocological measures of voice from data (Järvinen et al., in preparation), where nine pre-service physics teachers (3 pairs and 1 triad) solved Predict-Observe-Explain-type of tasks of DC circuits (McDermott & Shaffer, 1992). The DC circuit task sessions (3x90 minutes) were videoed and voices were recorded, and the discussions of pre-service teachers during sessions were transcribed. In this study, we analyse in detail part of those identified "Aha" and "Hmm" moments through content and interaction analysis. Finally, we show how these moments have supported pre-service physics teachers' conceptual understanding of basic DC circuit concepts of electric current, voltage, resistance and electric power.

Keywords: Physics teacher education, Conceptual understanding

References

- D'Mello, S., Lehman, B., Pekrun, R., & Graesser, A. (2014). Confusion can be beneficial for learning. *Learning and Instruction, 29*, 153–170. <https://doi.org/10.1016/j.learninstruc.2012.05.003>.
- Järvinen, K., Laukkanen, A.-M., Kähkönen, A.-L., & Mäntylä, T. (In preparation). Acoustic characteristics of voice and speech in learning dialogues.
- Kounios, J., & Beeman, M. (2009). The *Aha!* moment: The cognitive neuroscience of insight. *Current directions in psychological science, 18*(4), 210–216. <https://doi.org/10.1111/j.1467-8721.2009.01638.x>
- McDermott, L. C., & Shaffer, P. S. (1992). Research as a guide for curriculum development: An example from introductory electricity. Part I: Investigation of student understanding. *American journal of physics, 60*(11), 994–1003. <https://doi.org/10.1119/1.17003>.

Geographical thinking in enquiry-based teaching – a presentation of a tentative research design

CANCELLED!

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In autumn 2021, I completed my compilation licentiate thesis with the title *Geographical thinking in a digital teaching and learning environment: A study of secondary teachers' knowledge base and use of digital tools in geography education* (Nilsson, 2021). One result indicated that there is an embedded difficulty transforming geographical thinking into student instructions, for instance when making geographical analyses. I am now continuing the PhD-studies and will engage in two joint studies.

The aim of this presentation is to present ideas for a tentative research design for the coming up study. In the study enquiry-based teaching will be designed (Roberts, 2013; Whitburn & Mohamud, 2019) where social science teachers, in a communities of practice setting (in-service training) design their own enquiries. The enquiries will also be tested with groups of students. The method used for designing the enquiry/enquiries will be inspired from research within history education concerning enquiry-based research, the GeoCapabilities approach (see, for instance, Lambert et al., 2015) and the enquiries developed at the UCL Centre for Climate Change and Sustainability Education.

The overarching aim is to study how geographical thinking could be embedded in enquiries in secondary geography education concerning epoch typical problems and issues (for instance climate change) that provide the students with capabilities to explore and apply analysis of alternative futures in particular place contexts. To guide teachers in creating enquiries, they will be able to use didactical models and create vignettes. Models that frame enquiry-based teaching for developing geographical thinking (see Nilsson & Bladh, 2022) will be fruitful in this context. Similar to such models, a vignette can provide explanations of complex connections and changes in the world. In sum, I hope that enquiry-based teaching can bring new ways to incorporate geographical thinking in geography education.

Keywords: Enquiry-based teaching, Geographical thinking, In-service training

References

- Lambert, D., Solem, M., & Tani, S. (2015). Achieving human potential through geography education: A capabilities approach to curriculum making in schools. *Annals of the Association of American Geographers*, 105(4), 723–735. [https://doi.org/10.1016/S0002-9378\(97\)80024-5](https://doi.org/10.1016/S0002-9378(97)80024-5)
- Nilsson, S., & Bladh, G. (2022). Thinking Geographically? Secondary Teachers' Curriculum Thinking when Using Subject-Specific Digital Tools. *Nordidactica: Journal of Humanities and Social Science Education*, (3), 171–203.
- Roberts, M. (2013). *Geography through enquiry: Approaches to teaching and learning in the secondary school*. Geographical Association.
- Whitburn, R., & Mohamud, A. (2019). Anatomy of enquiry: Deconstructing an approach to history curriculum planning. *Teaching history*, 177, 28–39.
- UCL Centre for Climate Change and Sustainability Education. <https://www.ucl.ac.uk/ioe/departments-and-centres/centres/ucl-centre-climate-change-and-sustainability-education>

Learning about democratic rights and fact-checking in grade 6: An exploratory design study

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Teenagers have been shown to struggle in determining the credibility of misleading digital news when these are presented in deceptive ways (Breakstone et al., 2021; Nygren & Guath, 2022). Quasi-experimental classroom studies show that teaching students how to debunk misleading information is possible, but also complicated (Kohnen et al., 2020; McGrew & Byrne, 2020; Wineburg et al., 2022).

The purpose of this study is to investigate the impact of educational interventions designed to promote students' media and information literacy. We conduct research on one such effort in multiple design cycles and investigate whether younger students, age 12 and 13, may learn about democratic rights and learn to evaluate digital news.

The intervention is designed by Swedish public service in collaboration with local newspapers as live-streamed interactive lessons where approximately 12,000 students participate online with web cameras in their classrooms. The interactive lessons (Fria ordets dag) are designed to support students' (a) knowledge about freedom of expression and freedom of the press, (b) skills to evaluate real and false news, and (c) attitudes regarding trust online. In 2022, we conducted two studies with a subset of the participants during the spring (N=396) and fall (N=163). Using a pre-test and post-test quasi-experimental design, we identify some positive trends regarding the students' knowledge about freedom of speech and press freedom but also a problematic impact on their attitudes towards school and credible news consumption. We highlight the potential of digital apprenticeship to support fact-checking in elementary schools and the need for further research on how to promote young citizens' knowledge, skills, and attitudes about democratic rights and misinformation of importance to researchers and educational institutions.

Keywords: Media and information literacy, Design study, Civics education, Freedom of the press

References

- Breakstone, J., Smith, M., Wineburg, S., Rapaport, A., Carle, J., Garland, M., & Saavedra, A. (2021). Students' Civic Online Reasoning: A National Portrait. *Educational researcher, 50*(8), 505–515. <https://doi.org/10.3102/0013189X211017495>
- Kohnen, A. M., Mertens, G. E., & Boehm, S. M. (2020). Can Middle Schoolers Learn to Read the Web Like Experts? Possibilities and Limits of a Strategy-Based Intervention. *Journal of Media Literacy Education, 12*(2), 64–79.
- McGrew, S., & Byrne, V. L. (2020). Who Is behind this? Preparing high school students to evaluate online content. *Journal of Research on Technology in Education, 1*–19. <https://doi.org/10.1080/15391523.2020.1795956>
- Nygren, T., & Guath, M. (2022). Students Evaluating and Corroborating Digital News. *Scandinavian Journal of Educational Research, 66*(4), 549–565. <https://doi.org/10.1080/00313831.2021.1897876>

Wineburg, S., Breakstone, J., McGrew, S., Smith, M. D., & Ortega, T. (2022). Lateral reading on the open Internet: A district-wide field study in high school government classes. *Journal of Educational Psychology, 114*(5), 893–909.

Educational designs for critical thinking in arts, civics, history, psychology, and science

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Calle Håkansson, Annika Ehn-Magnusson, Ulrika Sahlin Åkerstedt, Sofie Mellberg, Nina Pirander & Maria Baum, Uppsala Municipality, Sweden

In previous research, it is emphasized that training for digital source criticism across subjects could "vaccinate" students against misinformation and help students think and act as fact-checkers (Ecker et al., 2022; McGrew, 2020; Roozenbeek et al., 2020). More subject-specific, teaching could promote subject-specific knowledge linked to source criticism, but this has only been partially investigated in classrooms (Nygren & Guath, 2019; Nygren & Guath, 2022).

In this study, researchers and teachers collaborate to investigate how different materials and working methods can stimulate upper secondary students' critical thinking in five different school subjects, namely arts, civics, history, psychology, and science.

Teachers' technological pedagogical content knowledge (Mishra & Koehler, 2006) is at the core of the design iterations aimed at investigating educational innovative designs with a positive impact in ordinary messy classrooms. This quasi-experimental research follows a pretest/posttest design to measure the impact of working with different materials and methods in the five school subjects. Approximately 1000 students at three different high schools participate in the research project where different subject-specific educational interventions are tested and evaluated. The results highlight how subjects may hold very different perspectives on critical thinking. We also find that design iterations can promote students' abilities to identify, evaluate and use digital information in critical and constructive ways in different school subjects. We also present and discuss what students learn and struggle to learn in the five subject-specific settings in light of research highlighting the importance of digital civic literacy (Nygren & Guath, 2022).

Keywords: Critical thinking, Subject-didactics, Design study intervention

References

- Ecker, U. K. H., Lewandowsky, S., Cook, J., Schmid, P., Fazio, L. K., Brashier, N., Kendeou, P., Vraga, E. K., & Amazeen, M. A. (2022). The psychological drivers of misinformation belief and its resistance to correction. *Nature Reviews Psychology*, 1(1), 13–29. <https://doi.org/10.1038/s44159-021-00006-y>
- McGrew, S. (2020). Learning to evaluate: An intervention in civic online reasoning. *Computers & Education*, 145, 103711. <https://doi.org/https://doi.org/10.1016/j.compedu.2019.103711>
- Nygren, T., & Guath, M. (2019). Swedish teenagers' difficulties and abilities to determine digital news credibility. *Nordicom review*, 40(1), 23–42.
- Nygren, T., & Guath, M. (2022). Students Evaluating and Corroborating Digital News. *Scandinavian Journal of Educational Research*, 66(4), 549–565. <https://doi.org/10.1080/00313831.2021.1897876>
- Roozenbeek, J., van der Linden, S., & Nygren, T. (2020). Prebunking interventions based on "inoculation" theory can reduce susceptibility to misinformation across cultures. *Harvard Kennedy School Misinformation Review*, 1(2). <https://doi.org/10.37016//mr-2020-008>

Secondary students' perceptions of peer-interaction in mathematics learning

Martin Nyman, Åbo Akademi University, Finland

Even though international research has focused students' emotions and motivation towards mathematics (e.g., Hannula, 2015; Ryan & Deci, 2000; Schukajlow et al., 2017), less interest has addressed students' self-reported experience of classroom work. In my presentation I will discuss secondary students' perceptions of what counts as relevant mathematics work and specifically under what conditions interaction with peers seem beneficial and how these benefits play out.

Data comes from semi structured and transcribed interviews with 25 students in grades 8 and 9 (14 and 15 years). The interviews focused on what students described as being important in school mathematics work. In the analysis I made a thematic search for descriptions of what mathematics work or activities contain and what their prerequisites are. In the presentation, I will discuss three themes: Labour, Emotion and Interaction.

Within the theme Labour students describe that the meaning of mathematics is applying the templates taught to solve tasks, and that the aim of this time-consuming work, is to produce as few faults possible, thus demanding high levels of concentration and thoroughness. The theme Emotion shows the brittle balance between on one hand anxiousness from not understanding and not feeling self-secure enough to ask for help and thereby getting stuck with one's labour, on the other hand a deep sense of pride when finishing the chores in a good manor. Both themes are recognised from previous research, for example Schoenfeld (e.g., 2020).

Even though emotional dimensions are also present in the Interaction-theme, the salient features are how these instances connects learning and self-awareness to interactive dimensions in working with mathematics. Students typically say they learn differently, or even more, when interacting with peers.

Keywords: Mathematics learning, Students' perceptions, Interview study

References

- Hannula, M. S. (2015). Emotions in problem solving. In S. J. Cho (Ed.), *Selected regular lectures from the 12th international congress on mathematical education* (pp. 269–288). doi:10.1007/978-3-319-17187-6_16
- Ryan, R. M., & Deci, E. L. (2000). Intrinsic and Extrinsic Motivations: Classic Definitions and New Directions. *Contemporary Educational Psychology, 25*, 54–67. doi:10.1006/ceps.1999.1020
- Schoenfeld, A. H. (2020). Mathematical practices, in theory and practice. *ZDM: Mathematics Education, 52*(6), 1163–1175. <https://doi-org.ezp.sub.su.se/10.1007/s11858-020-01162-w>
- Schukajlow, S., Rakoczy, K., & Pekrun, R. (2017). Emotions and Motivation in Mathematics Education: Theoretical Considerations and Empirical Contributions. *ZDM: The International Journal on Mathematics Education, 49*(3), 307–322.

Neonationalism in contemporary Nordic upper secondary textbooks: a comparative study of a “basic concept” that matters in a globalizing world

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Since the years around 2010, a large part of the world has experienced – what nationalism scholars have described as – a fourth wave of neo-nationalism/nativism. Visible examples are the repeated successes of “xenophobic” or “immigration-critical” populist movements, or the result of the Brexit referendum (Bergmann, 2020). Not only has this trend given political parties with such agenda considerable influence in Europe, but also pathed the way for a nationalistic turn in many of the world’s great power (Norris & Inglehart, 2019).

My presentation is based on results from a close reading comparative study of some upper secondary textbooks in history and civics, published in recent years in Nordic Countries. The overarching question is how the last decades neo-nationalism is reflected in the texts. The theoretical and methodological approach is influenced by conceptual historian Reinhart Koselleck – who perceived nationalism as a “basic concept” that could be understood with “concept-net” analysis (Koselleck, 2018; see also Berenskoetter, 2017). The study aims to answer some partly interrelated questions: Is neonationalism/nativism at all described, and if so, does it appear as a controversial or an unproblematic issue in the texts? How is nationalism in earlier historical periods described? Are these descriptions connected with neonationalism, and if so, how?

The results tie in with the theme of the conference as they concern the impact of history and civic education to the students' ongoing “bildung”-processes in a globalizing world. I argue that neonationalism in this respect, and in line with Wolfgang Klafki’s theory, must be seen as an epoch-typical problem of our time (cf. Sjöström & Tyson, 2022, p. 217). Comparisons between the teaching materials from the Nordic countries can also conceivably shed light on national historical-cultural dividing lines, which teachers and subject matter didactic researchers in the respective countries may have to deal with as a prerequisite for classroom activities.

Keywords: History and civic textbooks, Upper-secondary schools, Nationalism in a globalizing world

References

- Berenskoetter, F. (2017). Approaches to Concept Analysis. *Millennium*, 45(2), 151–173.
<https://doi.org/10.1177/03058298166651>
- Bergmann, E. (2020). *Neo-Nationalism: The rise of nativist populism*. Springer International Publishing.
- Koselleck, R. (2018). *Sediments of time: on possible histories*. Stanford University Press.
- Norris, P., & Inglehart, R. (2019). *Cultural backlash: Trump, Brexit, and authoritarian populism*. Cambridge University Press.
- Sjöström, J., & Tyson, R. (2022). *Didaktik för lärande och bildning*. Liber.

The study of literature in Spanish as a Foreign Language (SFL): New students' experiences and expectations

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When the modern languages made their way into the universities more than a century ago, the study of language was intertwined with the study of literature. As Graff (1984) has pointed out, the modern foreign languages introduced themselves as Language *and Literature* Departments. Since then, the relationship between the two has become less symbiotic, and especially so in the lower levels of education, where literature, at least in a foreign language like Spanish seems to play a much more peripheral role (Jørgensen, 2014; Olsbu, 2020; Reyes-Torres, 2019) Still, literature has maintained its centrality in FL education at university level, and courses in literature constitute an important part of the portfolio of most Foreign Language Departments in Norway today. Likewise, literature continues to have a strong position in other language subjects in school, such as English and Norwegian.

With this background in mind, we want to investigate the new SFL students' prior experiences with literature at school, and their expectations for the literary content in SFL at university level. Our research makes use of mixed methods; a detailed questionnaire combined with qualitative interviews of new SFL students in two different institutions of higher education in Norway (Creswell & Creswell, 2018; Patton, 2015).

Our aims are: 1) to map out new SFL students' experiences with literature from different school-subjects, and 2) increase our knowledge about the students' expectations (positive and negative) with regard to their first course on literature in Spanish.

In the presentation we will discuss the results from the survey and the interviews. We will also focus on their eventual consequences for future practice, for our consideration of Bildung within SFL, and for how we prepare students for a professional development as future teachers of foreign languages.

Keywords: Literature, Spanish as a Foreign Language, Didactics, Bildung

References

- Creswell, J. W., & Creswell, J. D. (2018). *Research design: qualitative, quantitative, and mixed methods approaches* (5th ed.). SAGE Publications.
- Graff, G. (1984). *Professing Literature: An Institutional History*. The University of Chicago Press.
- Jørgensen, S.B. (2014). Litteraturforståelse. In H. L. Andersen, S. S. Fernández, D. Fristrup, & B. Henriksen, (Eds.), *Fremmedsprog i gymnasiet. Teori, praksis og udsyn* (pp. 69–179). Samfundslitteratur.
- Olsbu, I. (2020). Litteraturens rolle. In C. Bjørke & Å. Haukås (Eds.), *Fremmedspråksdidaktikk* (pp. 227–248). Cappelen Damm Akademisk.
- Patton, M. Q. (2015). *Qualitative Research & Evaluation Methods* (4th ed.). SAGE Publications.
- Reyes-Torres A. (2019). Literatura. In J. Muñoz-Basols, E. Gironzetti, & M. Lacorte (Eds.), *The Routledge Handbook of Spanish Language Teaching. Metodologías, contextos y recursos para la enseñanza de español L2* (pp. 628–640). Routledge.

Students' narrative action in social science teaching in Swedish upper secondary schools – a call for increased attention to students' storytelling as conditions for the renewal of society and of social science teaching

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Taking on a narrative analysis of social studies teaching carried out in Swedish upper secondary schools (Blennow & Olson, in press), the aim of the presentation is revealed: to stress the need to pay (increased) attention to the contextual and situated limits and openings of the conceivable repertoire of legitimate stories of social studies in the Swedish context and its related research. In focusing on students' unique situated and collective interweaving of their 'own' experiences with established cultural and political knowledge repertoires, we wish to make a case for the potential involved in this storytelling: a renewal of society and of students' ways of acting and being in society. If meagre attention is provided to this interweaving, we argue that there is a danger that this renewal of society as well as of social studies education will get lost, or at least disturbed, in an undesirable way.

The narrative analysis on which the presentation is based was based on is a) field notes from classroom observations of every social science lesson for approximately six weeks in each class, in a medium-sized city in southern Sweden, and b) 36 transcribed interviews with social studies teachers and students. The theoretical-analytical grid in the analysis was the sociologist Czarniawska's (2004) narrative theory, where the students' storytelling attempts at sense making and action in encounters with the subject matter content was approached in terms of emplotments. In the analysis, Frank's (2015) ethnographic advice, to be widely inclusive at this stage, 'cultivating reflexive uncertainty about which stories will eventually be most useful' (2015, p. 39), was followed. Through the analysis, the 'repertoire of legitimate stories' about society in social studies teaching and students' attempts at sense making and action through their own social studies storytelling was rendered visible. The analysis rendered visible to what extent and in what ways the students insert cultural narratives into the subject matter teaching repertoire through their own subject storytelling. Out of the analysis, the transformational potential of these encounters, i.e., the emplotments, concerning society and students' ways of acting and being in society. Furthermore, it indicates the limits and openings of social studies teaching itself as a matter of predetermined 'truth telling', that is, as already-established socio-political knowledge repertoires.

Keywords: Social studies, Teaching, Upper secondary students, Narratives, Storytelling, Social science education

References

- Blennow, K., & Olson, M. (in press). Students' narrative action in social studies teaching in Swedish upper secondary schools: Limitations and openings. *Acta Didactica Norden*.
- Czarniawska, B. (2004). *Narratives in social studies research*. Sage Publications.
- Frank, A. W. (2015). Practicing Dialogical Narrative Analysis. In J. A. Holstein & J. F. Gubrium (Eds.), *Varieties of Narrative Analysis*. Sage publications.

Prerequisites for teaching about crisis and disaster preparedness in the younger years of primary school in social study subjects and science studies: a curriculum analysis

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The Covid pandemic, the war in Ukraine, the energy crisis and climate change all direct attention to the importance of disaster preparedness, both at an individual and societal level. Disaster preparedness has also received increasing attention internationally, for instance through the Sendai Framework for Disaster Risk Reduction. This global framework as well as the research literature stress the importance of promoting education on disaster preparedness and how schools play a key role in this regard (Johnson et al., 2014; Pfefferbaum et al., 2018; Selby & Kagawa, 2012). In our study, a systematic literature review shows that there is extensive international research on the integration of disaster preparedness in school education. However, corresponding research is lacking for the Swedish school.

The Swedish Agency for Education emphasises the importance of schools working proactively with disaster preparedness (Skolverket, 2022), but there are currently no guidelines regarding teaching in this area. There exists some educational material on disaster preparedness aimed at schoolchildren in the later years of elementary school and in upper secondary school, e.g., from the Swedish Civil Contingencies Agency (MSB) (2022), but it is currently up to the individual teacher to include this in the teaching.

In the present study, an investigation of the conditions for integrating disaster preparedness into teaching in elementary school was carried out, as a first step in a larger study that aims to develop a research-based teaching program for the earlier years of elementary school. Based on the international research literature on teaching about disaster preparedness, a text analysis of primary school curricula in the social study subjects and science studies, grades 1–6, was made. Preliminary results show that there are no explicit links to disaster preparedness in the current curricula. However, there is potential to align education on disaster preparedness to the existing curricular content.

Keywords: Curricula analysis, Disaster preparedness, Primary education

References

- Johnson, A., Ronan, K. R., Johnston, D. M., & Peace, R. (2014). Implementing Disaster Preparedness Education in New Zealand Primary Schools. *Disaster Prevention and Management*, 23(4), 370–380.
- Pfefferbaum, B., Pfefferbaum, R. L., & Van Horn, R. L. (2018). Involving children in disaster risk reduction: the importance of participation. *European Journal of Psychotraumatology*, 9(sup2), 1425577.
- Selby, D., & Kagawa, F. (2012). *Disaster Risk Reduction in School Curricula: Case Studies from Thirty Countries*. United Nations Children Fund.
- Skolverket. (2022). <https://www.skolverket.se/skolutveckling/sakerhet-och-krisberedskap-i-skola-och-forskola/sakerhet-och-krisberedskap-vid-ett-forandrat-omvarldslage> Retrieved 22-12-07
- Swedish Civil Contingencies Agency (MSB). (2022). <https://www.msb.se/sv/amnesomraden/skolmaterial/> Retrieved 22-12-07

Critical thinking, social belonging and democratic participation: Vocational students' civic Bildung and the enacted curricula

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Current challenges to society, such as the war in Europe, the pandemic and global warming highlight the importance of civic Bildung for all students. Students in Swedish upper secondary vocational programs (VETP) are disadvantaged in terms of civic education. VETP are strongly gendered and, compared to academic programmes, students tend to have low sociocultural capital (Panican & Paul, 2019). Also, VETP are dominated by workplace socialisation and provide few opportunities to practice critical thinking (Nylund et al., 2020; Rönnlund et al., 2019). We present the outline of a project funded 2023–2026 by the Swedish Research Council, aiming to contribute with knowledge of VET students' civic Bildung – critical thinking, social inclusion, and political agency – through school subject history, religion, science studies and social studies – which are generally ascribed importance in citizenship education.

Students in six classes from three different VET programs are interviewed on several occasions through their 3-year education. We examine how the teachers transform and enact the curricula to understand what is offered to the students through the four subjects. The framework of pedagogic rights, as well as pedagogic codes by educational sociologist Basil Bernstein (2000) is deployed in the analysis in combination with gender theories and intersectional perspectives (Connell, 2009; Yuval-Davies, 2008). By researching the students encounter with history, religion, science studies and social studies, we have a possibility to understand how the four subjects *together* contribute to the students' civic identities and understandings of the world and the society. Citizenship is closely related to social categories, as class and gender, and the distribution of knowledge, and of power and positions in social hierarchies is important perspectives if we are to understand VET students civic Bildung.

Keywords: Citizenship education, Vocational education and training, Subject teaching, Sociology of education

References

- Bernstein, B. (2000). *Pedagogy, symbolic control and identity*. Rowman & Littlefield pbl.
- Connell, R. W. (2009). *Om genus*. Daidalos.
- Nylund, M., Rönnlund, M., Ledman, K., & Rosvall, P.-Å. (2020). Socialisation and citizenship preparation in vocational education. *British Journal of Sociology of Education*, 41(1), 1–17.
- Panican, A., & Paul, E. (2019). *Svensk gymnasial yrkesutbildning – en framgångsfaktor för en effektiv övergång från skola till arbetsliv eller kejsarens nya kläder?* Svenska ESF-rådet.
- Yuval-Davis, N. (2008). Intersectionality, citizenship and contemporary politics of belonging. In B. Siim & J. Squires (Eds.), *Contesting citizenship* (pp. 561–574). Routledge.

Bridging the gaps: Exploring science teaching continuity across early years transitions

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The aim of this study is to conceptualize how teaching strategies and forms of knowledge in science vary across different school forms; preschool (ages 1–5), preschool-class (age 6), and grades 1–3 (ages 7–9) (cf. OECD, 2021). The empirical material is a subsample from a larger project (Due et al., 2022) and encompasses 19 observations of science teaching about theme water, across all three school forms. The first analytical step revealed several similarities across the different school forms: a) basic concepts recurred in all three EC school forms, b) water was introduced and framed in relation to varying contexts and aspects and c) was taught through a mix of approaches. Further analysis was needed to reveal the way science literacy and knowledge-building was enabled and constrained within the different school forms. Hence, we used the Legitimation Code Theory (LCT) with the concepts semantic gravity (degree of abstraction), semantic density (degree of complexity), and semantic profiles (Maton, 2020).

Three different semantic profiles were identified and characterized by an increasing degree of abstraction and complexity: A=the fragmented type with concepts and processes explored in children’s everyday contexts, personal and physical experiences, low degree of abstraction and complexity; B=the peak type with elements of abstraction and complexity integrated into the everyday contexts; C= teaching where forms of knowledge oscillate between abstract and every-day context linked to an increasingly complexity over time thus creating a “semantic wave”. Among the preschools, all three profiles were described, revealing a variation in semantic profiles that overlapped those described for preschool-class and grades 1–2 (type B and C). The type C profile created semantic waves giving opportunities for cumulative learning. Points of concern in relation to a vision of a continuity and progression in science education across EC school forms will be discussed.

Keywords: Early childhood, Science teaching, Legitimation Code Theory

References

- Due, K., Skoog, M., Areljung, S., Ottander, C., & Sundberg, B. (2022). Teachers’ conceptualisations of science teaching – obstacles and opportunities for pedagogical continuity across early childhood school forms. *International Journal of Early Years Education*. doi:10.1080/09669760.2022.2107492
- Maton, K. (2020). Semantic waves. Context, complexity and academic discourse. In J. R. Martin, K. Maton, & Y. J. Doran (Eds.), *Assessing academic discourse. Systemic functional Linguistics and Legitimation code theory* (pp. 59–85. Routledge.
- Mostacedo-Marasovic, Mott, B. C., White, H., & Forbes, C. T. (2022). Towards water literacy: an interdisciplinary analysis of standards for teaching and learning about humans and Water. *Disciplinary and Interdisciplinary Science Education Research*, 4(1), 1–21. <https://doi.org/10.1186/s43031-022-00065->
- Mouton, M., & Archer, E. (2019). Legitimation code theory to facilitate transition from high school to first-year biology. *Journal of Biological Education*, 53(1), 2–20. DOI:10.1080/00219266.2017.1420681
- OECD. (2021). *Starting Strong VI. Supporting Meaningful Interactions in Early Childhood Education and Care*. <https://www.oecd.org/publications/starting-strong-vi-f47a06ae-en.htm>

Becoming subject teachers in Italy. How to develop Pedagogical Content Knowledge (PCK) between Content Knowledge (CK) and Pedagogical Knowledge (PK)

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The first programme for subject teachers at university level started in 1999. It was a 2-year programme to be attended after taking a master degree in a subject. In 2022, a new reform provides 60 ECTS to be attended after having a master degree in a subject.

In 1987, Shulman defined Pedagogical Content Knowledge (PCK) as “the blending of content and pedagogy into an understanding of how particular topics are organized and adapted to the diverse abilities of learners and presented for instruction” (p. 8). Recently, Blömeke et al. (2015) stated that to teach effectively, teachers do not only need Content Knowledge (CK) and Pedagogical Knowledge (PK), but also an ability to apply this knowledge in teaching situations. Finally, the European commission recommends that it is necessary to bridge the gap between theory and practice and find the balance between subject studies and pedagogical studies (EC, 2007).

The crucial point is how to balance the activities focused on PK and those focused on CK in order to develop an effective PCK. The CK was developed during the master degree so the additional 60 ECTS provides 10 ECTS for pedagogical studies (PK), 30 ECTS focused on how to teach the subject (PCK) and 20 ECTS for teaching practice. This new programme should start in the next few months, and it should face several problems that characterised the previous Italian programmes for subject teachers, such as: Italian subject teachers are well prepared in the subjects but less prepared in how to teach them; lack of partnerships between subject specific degrees and pedagogical degrees; huge number of teacher candidates and teachers with temporary contracts.

Keywords: Subject teachers, Secondary school, Teacher education programme

References

- Blömeke, S., Gustafsson, J.-E., & Shavelson, R. J. (2015). Beyond dichotomies. *Zeitschrift Für Psychologie*, 223(1), 3–13. <https://doi.org/10.1027/2151-2604/a000194>
- European Commission. (2007). *Schools for the 21st century. Commission Staff Working Paper*. European Commission. https://www.parliament.bg/pub/ECD/74277SEC_2007_1009_EN_DOCUMENTDETRAVAIL_p.pdf
- Shulman, L. (1987). Knowledge and teaching: Foundations of the new reform. *Harvard Educational Review*, 57(1), 1–22.

The student as an individual in the Danish, Norwegian and Swedish L1 curriculum

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In the presentation, I will focus on how the student as an individual or subject is inscribed in the Danish, Norwegian and Swedish curriculum in L1 in upper secondary school. As the three curricula point at comparable academic competences and qualification the students must obtain -though differing in nuances and meaning - the presentation of the student as an individual differs in extent, significance and academic context. In the Danish curriculum, the notion of 'personal voice' in writing is connected to the student as an individual, in the Norwegian curriculum the concept of exploration and creativity seems to afford the recognition of individuality and in the Swedish curriculum, the teaching is supposed to enable personal development and trust as subjective features.

The question of which perspectives on subjectivity and individuality are prevalent in the curricula, and how they seem to relate to academic competences and outcome, will be guiding the comparative analysis of the three curricula. Two focus-group interviews with Danish L1 upper secondary school teachers on the concept of 'personal voice' will complement the comparative curriculum analysis, as research, academic debates and practice show substantial difficulties realizing 'personal voice' adequately.

How and why weigh individuality as a process of, a necessity for or an aim for education will be explored, as will the different notions of individuality, mentioned above. The analysis of the formal curricula will shed light on the relation between individuality and values of knowledge, as the focus-group interviews will aim at the perceived understanding of 'personal voice' as part of the L1 education in upper secondary school.

Keywords: Comparative curricula, Individuality

References

- Adamson, B., & Morris, P. (2014). Comparing Curricula. In M. Bray, B. Adamson, B., M. Mason, (Eds.), *Comparative Education Research*. CERC Studies in Comparative Education, 19. Springer, Cham. https://doi.org/10.1007/978-3-319-05594-7_11
- Deng, Z. (2016). Bringing curriculum theory and didactics together: A Deweyan perspective. *Pedagogy, Culture & Society*, 24(1), 75–99.
- Krogh, E., & Piekut, A. (2015). Voice and narrative in L1 writing. *Special Issue on Scandinavian L1 Research. L1-Educational Studies in Language and Literature*, 15, 1–42. <http://dx.doi.org/10.17239/L1ESLL-2015.15.01.10>
- Pinar, W. F. (2015). Individuality as an educational project: Kilpatrick, curriculum theory, teacher education. *Encounters in Theory and History of Education*, 16, 112–128.
- White, J. (1980). Conceptions of Individuality. *British Journal of Educational Studies*, 28(3), 173–186. <https://doi.org/10.2307/3120284>

Intercultural and Interdisciplinary learning for a life in a global world. The EXCALIBUR project – Handling sustainability challenges in virtual worlds

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The EXCALIBUR project (EXpanding Content And Language Integrated learning through BUilding a sustainable future in Realtime) is an ERASMUS+ project in which researchers, developers, teacher educators, teachers and students collaborate in several European countries including Finland, Norway and Germany. The project combines sustainability issues, learning across educational levels and learning foreign languages and STEM in an interdisciplinary setting (English, German, and French) using CLIL (LOTE) (cf. Mehisto et al., 2008; Maljers et al., 2010).

In the project, students from different countries collaborate in working groups in virtual worlds, in order to find solutions to current sustainability challenges. The approach involves information retrieval, reviewing and processing it and, if necessary, translating it into the working language, in order to make it accessible to all and adapting what has been found to the building in 3D-gameworlds.

In our contribution, we would like to first present results of our study which accompanies the project. With a mixed-methods approach we investigate how the students approach the challenges of multilingual information search, information processing and adapted information application in different languages and virtual building work with partners from different countries with different cultural backgrounds. The embedding of the project in virtual worlds with avatars, individually chosen by the students, allows an action-based approach and unique insights into the learner communication (see Pihkala-Posti, 2015). Additionally, the focus on sustainability challenges draws attention to a content, to interaction and thinking across subjects, school levels and to prepare for a life after school (Rieckmann et al., 2017).

Keywords: CLIL and CLIL LOTE, STEM, Game based learning, Action based learning

References

- Maljers, A., Marsh, D., Wolff, D., Genesee, F., Frigols-Martín, M., & Mehisto, P. (2010), based on D. Marsh & D. Wolff (Eds.). (2007), *Diverse Contexts – Converging Goals: CLIL in Europe*. Peter Lang.
- Mehisto, P., Marsh, D., & Frigols, M. J. (2008). *Uncovering CLIL: Content and language integrated learning in bilingual and multilingual education*. Macmillan Education.
- Pihkala-Posti, L. (2015). Spielerische Kollaboration und kommunikative Authentizität mit Minecraft. *German as foreign language*, 2, 99–133. http://www.gfl-journal.de › tm_pihkala-posti
- Pihkala-Posti, L. (2020). Interactive, authentic, gameful e-learning concepts for the foreign language classroom. In E. Ropo & R. Jaatinen (Eds.), *Subject Teacher Education in Transition: Educating Teachers for the Future* (pp. 137–177). <http://urn.fi/URN:ISBN:978-952-359-016-8>
- Pihkala-Posti, L. (2022a). Authentische Interaktion mit dem Computerspiel Minecraft. *Fremdsprache Deutsch (Thema Interaktion – digital und vernetzt)*, 66, 45–52.
- Pihkala-Posti, L. (2022b). In der virtuellen Welt die reale Welt retten lernen. *ON Lernen in der digitalen Welt Heft*, 10/2022, 30–31.
- Rieckmann, M., Mindt, L., & Gardiner, S. (2017). *Education for Sustainable Development Goals. Learning Objectives*. UNESCO.

General didactics for an uncertain world? Analyzing curriculum literature in Danish teacher education

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In this paper, we analyze curriculum literature used in the course General Didactics in the Danish teacher education. Danish teacher education – and thus General Didactics, being one of its key disciplines – has undergone significant changes in recent decades. There is, however, a lack of empirical research regarding the content of the actual local curriculum literature. We do not know, for instance, if the realized curriculum has in fact become more ‘theoretical’ or more ‘practical’; if it is dominated by certain theoretical positions; or if it has in fact been ‘instrumentalized’, as has been suggested (Bjerre & Dorf, 2019; Rasmussen, 2022).

In a previous study, we mapped the curriculum literature used in the course General Didactics in all Danish teacher education colleges in the year 2020/2021, a total of 600 references (Mikkelsen & Pjedsted, 2022). The study showed a dominance of introductory literature and of certain references, but it also showed great local variance and indicated a quite ‘scattered’ concept of General Didactics. This conference paper presents a follow-up study analyzing the 14 most used of these references. Drawing on content analysis and general didactics theory (Krogh et al., 2022; Zierer, 2011), we examine the types of knowledge, theory, and didactical positions represented in the texts. Central to the analysis is assessing the balance between descriptive and prescriptive theories, and between humanistic, critical, neopositivist, and other theoretical positions.

The study contributes to the field of general didactics, providing empirical answers to the questions of where the discipline is headed; and whether or not it does have room for broader visions and discussions of schooling, teaching, and Bildung in relation to societal and existential questions and challenges – in a changing and uncertain world.

Keywords: General didactics in teacher education, Curriculum literature analysis, Defining general didactics empirically

References

- Bjerre, J., & Dorf, H. (2019). Læreruddannelsens vidensgrundlag efter reformen. *Studier i læreruddannelse og -profession online*, 4(1). <https://tidsskrift.dk/SLP/article/download/117987/166013/pdf>
- Krogh, E., Qvortrup, A., & Graf, S. T. (2022). The question of normativity: Examining educational theories to advance deliberation on challenges of introducing societal problems into education. I E. Krogh, A. Qvortrup, & S. T. Graf (Eds.), *Bildung, Knowledge, and Global Challenges in Education: Didaktik and Curriculum in the Anthropocene Era*. Routledge.
- Mikkelsen, S. S., & Pjedsted, P. D. M. (2022). *Almen didaktik i læreruddannelsen? En kortlægning af den anvendte litteratur i almen undervisningskompetence på de danske læreruddannelser*. Center for Anvendt Skoleforskning. UCL Erhvervsakademi og Professionshøjskole. ucviden.dk
- Rasmussen, J. (2022). *Viden om læreruddannelsen*. Nationalt Center for Skoleforskning. Aarhus Universitetsforlag.
- Zierer, K. (2011). Versuch einer Systematisierung allgemeindidaktischer Grundlagenliteratur. *Jahrbuch für Allgemeine Didaktik*, 1(1), 157–173.

Students' meaning making process in understanding practice through theory

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In this paper, we seek to understand how student teachers make sense of a classroom event by analyzing it with theory in exam papers. The relation between theory and practice is both the most central perspective in teacher education and an ontological and epistemological “Gordian knot” which has been discussed widely in educational literature (e.g., Korthagen, 2008). Our contribution to this discussion is to examine how student teachers analyze a self-experienced practice situation in an exam paper in the intersection between understanding the school practice on the one hand and, on the other hand, the theoretical aims and demands of the teacher's education.

On this background, our research question is, “How do student teachers analyze a self-experienced practice situation, and how do they make sense of the relation between theory and practice in exam papers?”

In this study, we examine 30 practice assignments from student teachers who are enrolled in three different classes in teacher education. To understand the sense-making in the students' analyses, we use the concept of envisioning building (Langer, 2011). The concept can explain the students' process of creating his or her understanding of a text, i.e., their description of their practice situation. To examine this sense-making process, we analyze the students' way of noticing (van Es & Sherin, 2021), including the concept of framing (Scheiner, 2020), which is a culturally and historically constituted form of organizing and structuring experience.

Our preliminary result indicates that the students categorize the classroom events with the concepts of big t-theory (Korthagen, 2008; Nielsen, 2015). They notice what they, in their education, are demanded to fulfill in the goals of the practice exam to show their competencies with theoretical concepts visualized in their exam paper.

Keywords: Envisionment building, Framing, Learning to noticing

References

- Korthagen, F. A. J. (2008). *Linking Practice and Theory – The Pedagogy of Realistic Teacher Education*. Routledge.
- Langer, J. (2011). *Envisioning literature: literary understanding and literature instruction*. Teachers College Press.
- Nielsen, B. L. (2015). Pre-service teachers' meaning-making when collaboratively analysing video from school practice for the bachelor project at college. *European Journal of Teacher Education*, 38(3), 341–357. <http://dx.doi.org/10.1080/02619768.2014.983066>
- Scheiner, T. (2020). Towards a more comprehensive model of teacher noticing. *ZDM – Mathematics Education*, 53, 85–94. <https://doi.org/10.1007/s11858-020-01202-5>
- van Es, E. S., & Sherin, M. G. (2021). Expanding on prior conceptualizations of teacher noticing. *ZDM – Mathematics Education*, 53, 17–27. <https://doi.org/10.1007/s11858-020-01211-4>

How knowledge-building becomes illuminated in history teachers' lectures and instructions

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Even though the positive effects of language-based approach to subject teaching are well known, very little research targets the meaning-making resources used in history teaching activities that display content knowledge and develop knowledge and skills in relation to the content knowledge. The overall aim of this PhD project is to explore how the content knowledge of school history is revealed and communicated through teaching activities in lower secondary school settings in Sweden. Thereby, this study contributes to the existing knowledge within the research field of linguistics about the relationship between language and learning (e.g., Gibbons, 2009; Hipkiss, 2014; Schleppegrell, 2004). More specifically, to explore how first-order concepts may become affordances to students' reference knowledge through teachers' lectures and instructions. Based on participant classroom observations and video documentation of history teaching in linguistically diverse classrooms in Grade 7 and 8, I use Legitimation Code Theory and semantic gravity from the dimension of Semantics (Maton, 2014) to analyse the level of contextualisation when first-order concepts are presented to the students, in the historical context.

The tentative results show that the teachers use a wide range of shifts between stronger and weaker semantic gravity in the contextualisation of first-order concepts and, thereby, different kinds of knowledge become intertwined, which support the affordances of students' knowledge-building. The results also show that when the teachers strive to explain first-order concepts to the students, the first-order concepts are at risk of becoming glossary, without connection to the specific historical context they intend to explain. This, in turn, may lessen the possibilities for knowledge-building for the students.

Keywords: History didactics, Linguistics, LCT

References

- Gibbons, P. (2009). *Stärk språket, stärk lärandet: Språk- och kunskapsutvecklande arbetssätt för och med andraspråkselever i klassrummet* (2nd ed.). Hallgren & Fallgren.
- Hipkiss, A. M. (2014). *Klassrummets semiotiska resurser. En språkdidaktisk studie av skolämnen hem- och konsumentkunskap, kemi och biologi* [Doctoral diss.]. Studier i språk och litteratur från Umeå universitet 23. <http://umu.diva-portal.org/smash/get/diva2:758753/FULLTEXT01.pdf>
- Maton, K. (2014). *Knowledge and knowers: Towards a realist sociology of education*. Routledge.
- Schleppegrell, M. J. (2004). *The language of schooling: A functional linguistics perspective*. Routledge.

Agency and transformative potential of technology in students' images of the future: Futures thinking as critical scientific literacy

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The goal of formal education is, in a sense, to prepare young people for the future. Meanwhile, images of the future tend to be somewhat dominated by expectations, hopes and fears regarding scientific and technological advancements and their various impacts on societies and human life in general (e.g., Angheloiu et al., 2020; Myllyniemi, 2017). Interestingly, while various trends in education highlight the importance of pedagogies that address societal and environmental questions and promoting students' agency, research has only recently been exploring how to inform the development of "future-oriented science education".

To inform the construction of a comprehensive framework to this end, the research outlined here explored the connections between students' scientific literacy and their futures thinking, especially focusing on the agency-oriented "Vision III" perspective on scientific literacy that in turn draws partly from the Bildung tradition (Sjöström & Eilks, 2018) and its similarities to the concept of futures literacy (Miller, 2007). To root the argument in students' thinking, we set out to address this issue by investigating 58 secondary school students' essays describing their image of a desirable future. Abductive content analysis (Thompson, 2022) showed that students' images of the future feature technological changes ranging from improved everyday devices to large-scale technologisation, thus spanning discussions of incremental and radically transformative sociotechnical change and nonproblematic and complexly value-laden issues. Importantly for agency-oriented scientific literacy, students' socioscientific thinking around agency over such change was mostly vague, even if some students constructed detailed narratives about expert and nonexpert roles in deep socioscientific discourse.

After presenting our findings, we conclude by discussing their implications for the development of future-oriented science education.

Keywords: Futures, Science Education, Agency

References

- Angheloiu, C., Sheldrick, L., & Tennant, M. (2020). Future tense: Exploring dissonance in young people's images of the future through design futures methods. *Futures*, 117, 102527. <https://doi.org/10.1016/j.futures.2020.102527>
- Miller, R. (2007). Futures literacy: A hybrid strategic scenario method. *Futures*, 39(4), 341–362. <http://dx.doi.org/10.1016/j.futures.2006.12.001>.
- Myllyniemi, S. (Ed.). (2017). *Katse tulevaisuudessa. Nuorisobarometri 2016*. Opetus- ja kulttuuriministeriö.
- Sjöström, J., & Eilks, I. (2018). Reconsidering different visions of scientific literacy and science education based on the concept of Bildung. In Y. J. Dori, Z. Mevarech, & D. Baker (Eds.), *Cognition, metacognition, and culture in STEM education* (pp. 65–88). Springer. https://doi.org/10.1007/978-3-319-66659-4_4
- Thompson, J. (2022). A Guide to Abductive Thematic Analysis. *The Qualitative Report*, 27(5), 1410–1421. <https://doi.org/10.46743/2160-3715/2022.5340>

Finnish language teachers' collaboration practices: A study of teachers' understanding of teaching of native level Finnish through participation in teacher-researcher collaboration

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In Swedish-speaking schools in Finland, the bilingual (Swedish-Finnish) students constitute most of the multilingual students, approximately 40%. Although native level Finnish (NaFi) has been a part of the national curriculum in grades 1–6 since 1989, in grades 7–9 since 1992 and in upper secondary school since 1994, research in the field of NaFi education is very limited (Geber, 2013; Nummela & Westerholm, 2020). National evaluations regarding the learning outcomes in Finnish as the second national language, clearly show a need for developing the teaching of bilingual students in different educational stages. The evaluations also show the importance for the Finnish language teachers to reach a shared understanding of the aim and task for teaching NaFi (Åkerlund et al., 2019).

The aim of this study (part of my Doctoral thesis) is to analyze Finnish language teachers' understanding of their own teaching of NaFi through their participation in teacher-researcher collaboration in an action research-based language didactic development project. In addition, the study aims to describe what enables and constrains teacher-researcher collaboration. The theory of practice architectures is used for analyzing the different forms of collaboration practices (Kemmis & Grootenboer, 2008). The data consists of twelve audio recordings (26 hours) of meetings involving seven tutor teachers, 30 local teachers and myself as a researcher. The participating teachers came from officially bilingual municipalities (14), with variations regarding Finnish or Swedish being the majority language.

The preliminary results show that teachers, depending on their region, have different views on who NaFi education is aimed for and what challenges they face as teachers. The tutor teachers' encouragement impacts the other teachers' involvement and motivation in the project. The research findings contribute to the Nordic educational research field by providing a deeper understanding of how teacher-researcher collaborations can support teachers' professional learning.

Keywords: Native level Finnish, Teacher-researcher collaboration

References

- Geber, E. (2013). *Kan vi bli bättre? De svenskspråkiga gymnasisternas framgång i studentexamen 2007–2012*. Svenska kulturfonden.
- Kemmis, S., & Grootenboer, P. (2008). Situating praxis in practice: Practice architectures and the cultural, social and material conditions for practice. In P. Salo & S. Kemmis (Eds.), *Enabling Praxis: Challenges for education* (3rd ed., pp. 37–64). Sense Publishers.
- Nummela, Y., & Westerholm, A. (2020). "Det är bra att börja i tid" – *Undervisningen i finska i de svenskspråkiga skolorna* (Rapporter och utredningar 2020:5). Utbildningsstyrelsen.
https://www.oph.fi/sites/default/files/documents/det_ar_bra_att_borja_i_tid.pdf

Åkerlund, C., Marjanen, J., & Lepola, L. (2019). *Lärresultat i finska i åk 6 – Resultat av en utvärdering våren 2018* (Publikationer 6:2019). Nationella centret för utbildningsutvärdering.
https://karvi.fi/wpcontent/uploads/2019/04/KARVI_0619.pdf

Achieving sustainability in an unpredictable global world? The Swedish National Curriculum in the tension field between internationalization and sustainability

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Education is frequently put forward as a key to achieve societal change towards sustainability. National curricula present guidelines for educational practice stating what knowledge and skills students need to be prepared for future challenges. The curriculum is a canvas painted with imaginaries of a desired future. The description of knowledge, the use of concepts, and the emphasis put on different sections define educational practice.

Here, I critically analyze the sustainability discourse in the Swedish national curriculum using Carol Bacchi's WPR- approach keeping the following questions in mind: How is sustainability described in the curriculum? What are the challenges? What knowledge and skills are needed? So far, results show that sustainability imaginaries differ between sections. The first general section describes the purpose of education as laying the foundation for democratic values, lifelong learning, and respect for the environment and human rights. Accordingly, teachers shall on the one hand prepare students to become competitive in face of internationalization and a competitive mobile labor market, and on the other hand to take collective action to solve complex environmental issues. A sustainability imaginary composed of competing individuals that take collective action or an oxymoron?

Both, competition and collective action, call for creativity, curiosity, self-confidence, communicative and social skills, as well as dynamic thinking and an understanding of the relativity of knowledge. The second subject-specific section describes education content and knowledge requirements with a focus on individual assessment. In their planning, teachers refer to this section more frequently than to the general section. Therefore, it is astonishing that collective action is touched upon only marginally here.

Finally, although education for sustainability is presented as the key to collective action for societal change towards sustainability, the subject-specific section is dominated by sustainability imaginaries that emphasize individuals' competitiveness rather than collective action.

Keywords: Critical discourse analysis, Policy implementation, Social reconstruction

References

- Bacchi, C. (2012). Why Study Problematizations? Making Politics Visible. *Open Journal of Political Science*, 02(01), 1-8. <https://doi.org/10.4236/ojps.2012.21001>
- Ball, S., Maguire, M., Braun, A., Perryman, J., & Hoskins, K. (2012). Assessment technologies in schools: "deliverology" and the "play of dominations." *Research Papers in Education*, 27(5), 513–533. <https://doi.org/10.1080/02671522.2010.550012>
- Bergh, A. (2015). Local quality work in an age of accountability – between autonomy and control. *Journal of Education Policy*, 30(4), 590–607. <https://doi.org/10.1080/02680939.2015.1017612>
- Hansen, D. R., & Phelan, A. M. (2019). Taste for democracy: A critique of the mechanical paradigm in education. *Research in Education*, 103(1), 34–48. <https://doi.org/10.1177/0034523719836671>

Willbergh, I. (2015). The problems of 'competence' and alternatives from the Scandinavian perspective of Bildung. *Journal of Curriculum Studies*, 47(3), 334–354.
<https://doi.org/10.1080/00220272.2014.1002112>

Reading Practices and Digital Textbooks in Danish Grade 6 Classrooms – An Exploratory and Review-informed Pilot Study

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In Danish primary and lower secondary classrooms, digital textbooks are accessible through several channels and have become widely used, especially in grade 4 through 9. However, students' reading practices need to be investigated further. In a pilot study (2022–2023), initiated by The National Centre for Reading and Læremiddel.dk, researchers from Danish University Colleges and University of Southern Denmark explore how teaching practices related to reading as well as students' reading practices take place in grade 6 classrooms.

The study pursues two tracks: We conduct a review study, and an exploratory field study. The review study includes research from 2017 and onwards that reports findings related to three questions: What do we know about students' reading of digital textbooks? What do we know about teachers' introduction of digital textbooks in classrooms? What do we know about the relationship between students' reading and digital textbooks' design? The exploratory field study takes an ethnographically inspired approach and uses observations, informal interviews, video recordings, and screen recordings, to investigate how grade 6 students meet, and interact with, digital textbooks ("fagportaler" in Danish) in L1 Danish, History, Christian Studies, and Natural science/technology.

It is well known that reading practices and reading outcome relate to the medium that presents the text to its readers (Delgado et al., 2018; Støle et al., 2020). Research into digital textbooks shows that these textbooks differ from traditional analogue textbooks in various ways, and that sometimes, teachers let textbooks set the agenda in the classroom. However, less is known about the complex interaction between teaching and learning practices related to reading in digital textbooks.

The study aims to provide a basis for further investigations into teaching and learning practices related to reading in digital textbooks. Of special interest is what we may learn from a data collection strategy that involves video recordings of classrooms, screen recordings, observations and interviews.

Keywords: Digital reading, Digital textbooks, Teaching and reading practices

References

Brok, L. S., Lund, H. R., & Køhler, A. S. (2017). *Kortlægning. Læsning på digitale enheder*. Nationalt Videncenter for Læsning.

- Delgado, P., Vargas, C., Ackerman, R., & Salmerón, L. (2018). Don't Throw Away Your Printed Books: A meta-analysis on the effects of reading media on reading comprehension. *Educational Research Review, 25*, 23–38.
- Gissel, S. T., & Skovmand, K. (2018). *Kategorisering af digitale læremidler. En undersøgelse af didaktiske, digitale læremidlers karakteristika*. Læremiddel.dk.
- Støle, H., Mangen, A., & Schwippert, K. (2020). Assessing children's reading comprehension on paper and screen: A mode-effect study. *Computers & Education, 151*.

What are the characteristics of source criticism in social science education?

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We know from research that students generally lack the ability to critically examine information and information sources in a satisfying way (Haider & Sundin, 2020; McGrew, 2022) and that classroom interventions about civic online reasoning, lateral reading and click restraint to some extent can improve students' knowledge and abilities (Axelsson et al., 2021; Wineburg et al., 2022). However, most studies about source criticism tend to focus on digital source evaluation and are made in the context of history education. Is it possible to separate the digital world completely from the physical world and is source criticism the same in all subjects? This study's point of departure is that the digital is integrated into the physical world and we need more studies that take this into account. Furthermore, it is suggested that we do not know what source criticism is when it comes to social science education and that this needs to be explored.

This study aims to examine what students do and what knowledge, abilities and attitudes they need to develop in order to critically examine and evaluate different sources in social science education. What challenges do they come across? In other words, what are the characteristics of source criticism in social science? The study will be using elicitation techniques to get students to verbally express their knowledge, abilities and attitudes about and towards information and information sources in relation to what the information can be used for. A pilot has been done and a draft to an analysis of the students' perceptions as expressed in the pilot will be presented.

Keywords: Social science, Source criticism, Media and information literacy

References

- Axelsson, C.-A. W., Guath, M., & Nygren, T. (2021). Learning How to Separate Fake From Real News: Scalable Digital Tutorials Promoting Students' Civic Online Reasoning. *Future Internet*, 13, 60. <https://doi.org/10.3390/fi13030060>
- McGrew, S. (2022). Internet or Archive? Expertise in Searching for Digital Sources on a Contentious Historical Question. *Cognition and Instruction*, 40(4), 488–516. <https://doi.org/10.1080/07370008.2021.1908288>
- Haider, J., & Sundin, O. (2020). Information literacy challenges in digital culture: conflicting engagements of trust and doubt. *Information, Communication & Society*, 25(8), 1176–1191. <https://doi.org/10.1080/1369118X.2020.1851389>
- Wineburg, S., Breakstone, J., McGrew, S., Smith, M. D., & Ortega, T. (2022). Lateral Reading on the Open Internet: A District-Wide Field Study in High School Government Classes. *Journal of Educational Psychology*, 114(5), 893–909. <https://doi.org/10.1037/edu0000740.supp>

Teachers' work with successful scaffolding strategies in teaching writing – four different secondary school contexts in Finland and Sweden

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The project *Scaffolding writing* aims to contribute new knowledge on how texts are produced in Swedish and how teachers work with successful scaffolding strategies in teaching writing in four language settings. The goal of the project is to develop pedagogies of writing in linguistically heterogeneous settings, particularly with respect to writing strategies for first and second language speaking students in years 7–9.

The project is framed within socio-cultural and socio-semiotic perspectives on language and scaffolding (Gibbons, 2006; Magnusson & Rejman, submitted; Rosvall et al., 2022; Tjernberg, 2016). Data consist of interviews with teachers and observational field notes from classrooms where writing was taught and practiced. In Finland, data were collected in three different settings with Swedish as language of instruction: a mainstream secondary school, an immersion class, and a language island school. Corresponding data in Sweden were collected in two language introduction classes, i.e., classes for newly arrived students. The material consisting of fieldnotes from observations and audio-recorded teacher interviews was analyzed via qualitative content analysis (Shreier, 2012). Especially, scaffolding strategies in the different contexts were juxtaposed and analyzed in relation to teachers' motives and aims.

Results point to teachers exhibiting broad repertoires of scaffolding strategies in the classrooms. These represent both planned and interactive scaffolding strategies; among planned strategies are the use of multimodal resources and collaborative writing, whereas interactive strategies consist of explanations, reformulations, examples and questions. Students' multilingual resources also constituted a type of interactive scaffolding strategy.

The results will contribute to further explore the multifaceted relationship between the theoretical construct of language scaffolding/language support and the various ways it is defined, understood and implemented by teachers during writing activities in class.

Keywords: Scaffolding, Writing instruction, Swedish as first and second language

References

- Gibbons, P. (2006). *Bridging discourses in the ESL classroom: students, teachers and researchers*. Continuum.
- Magnusson, U., & Rejman, K. (submitted). Teacher perspectives on writing instruction in the Language introduction program in Sweden.
- Rosvall, C., Heilä-Ylikallio, R., & Björklund, S. (2022). Lärarstuderandes examensarbeten om stöttning av elevers skrivande. In S. Björklund, B. Haagenen, M. Nordman, & A. Westerlund (Eds.), *Svenskan i Finland 19*. Svensk-Österbottniska Samfundet r.f. nr 82.
- Shreier, M. (2012). *Qualitative Content Analysis in Practice*. Sage.
- Tjernberg, C. (2016). *Skrivundervisning: Processinriktat skrivande i klassrummet*. Natur & kultur.

Use, Agency, and Identification: Discourses on Multilingualism among Students in Language Immersion and European School

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This presentation draws on a study on multilingual language use among students in two multilingual language programs – Swedish Immersion in Finland, based on a national core curriculum, and The European School Model in Belgium, based on a transnational curriculum approved by the EU states. During the 21st century, the need for establishing different types of bilingual education has increased (Baker, 2017), with a certain focus within research on the impact the language of instruction has on students' school results.

In our study, we focus on the impact of bilingual education, national and transnational, in the views of the students when they talk about their multilingualism and multilingual language use. Our aim is to investigate how practices and language-oriented ideologies circulate and interact when the students talk about their multilingualism and language use. The theoretical framework is based on the notions of multicompetence (Cook, 2016), expertise, affiliation and inheritance (Rampton, 1997), linguistic ownership (Norton, 1997) and agency (Ahearn, 2001). The data consists of interviews, approached by using a thematic analysis with multilingualism as a defining characteristic of the participants.

The results show three protruding discourses: discourse on flexibility in the use of multiple languages, discourse on agency for including and excluding interlocutors, and discourse on linguistic identification. The discourses are similar between the students in the two multilingual educational programs, but show differences linked to ideologies in the societal contexts as well as curricula and practices of the respective educational form. Finally, the results make obvious that when the multilingualism of the participating teenagers is investigated in its own right, the dimensions of monolingualism versus multilingualism are not relevant anymore. It is more about flexibility, context dependency, power, agency, affiliation and ownership.

Keywords: National and transnational multilingual education, Language use, Language-oriented discourses and ideologies

References

- Baker, C., & Wright, W. E. (2017). *Foundations of Bilingual Education and Bilingualism* (6th ed.). Multilingual Matters.
- Cook, V. (2016). Premises of Multi-Competence. In V. Cook & L. Wei (Eds.), *The Cambridge Handbook of Linguistic Multi-competence* (pp. 1–25). Cambridge University Press.
- Duff, P. (2012). Issues of identity. In A. Mackey & S. Gass (Eds.), *The Routledge Handbook of Second Language Acquisition* (pp. 410–426). Routledge.
- Norton, B. (1997). Language, identity and the ownership of English. *TESOL Quarterly*, 31(3), 409–429.
- Rampton, B. (1997). Displacing the 'native speaker': Expertise, affiliation, and inheritance. *ELT Journal*, 44(2), 97–101.

***Bildung*, curriculum and subject teaching**

– Case: L2 Swedish in general upper secondary schools

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Bildung has been advocated in Finnish national core curricula for decades. For instance, “the underlying values of the National core curriculum for general upper secondary education are built on democracy and the Finnish ideal of education, in which studying and learning are deemed to regenerate society and culture” (Finnish National Agency for Education, 2020). *Bildung* (or, rather, general knowledge and ability) is seen, for instance, as the individual’s capability of “making decisions based on ethical reflection” or “the skill and willingness to address conflicts between the human endeavours and the prevalent reality ethically, compassionately, and by searching for solutions”.

To enhance *Bildung* in education, the 2019 core curriculum presents an array of transversal competences, such as societal, communicative, multidisciplinary and creative competences, the general objectives of which include “a good overall knowledge and skills base” as well as “competences needed in building a sustainable future”, the ultimate goal being a good, balanced and civilised human being.

These competences are to be implemented in the teaching of all subjects. In this presentation, the focus is on L2 Swedish, i.e., Swedish as the second national language. As Finnish language teachers heavily rely on commercial study books in their teaching (Luukka et al., 2008), the way in which transversal competences are taken into account in these books is of utmost importance in promoting *Bildung* in education.

In this presentation, I will discuss how *Bildung*, through the objectives of transversal competences, is mediated in two widely used Finnish study book series on Swedish as the second national language. The results suggest that study book authors have carefully read the curriculum, but simultaneously they seem to have relied on the subject itself offering enough perspectives on the competences in question.

Keywords: Bildung, Curriculum, Language teaching

References

- Finnish National Agency for Education. (2020). *National core curriculum for general upper secondary education 2019*. Finnish National Agency for Education.
- Luukka, M.-R., Pöyhönen, S., Huhta, A., Taalas, P., Tarnanen, M., & Keränen, A. (2008). *Maailma muuttuu - mitä tekee koulu? Äidinkielen ja vieraiden kielten tekstikäytännöt koulussa ja vapaa-ajalla*. Jyväskylän yliopisto, Soveltavan kielentutkimuksen keskus.

Global citizenship and the representations of “the others” in Norwegian textbooks in social science

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This paper aims to shed light on the representations of “the others” and the ways global citizenship appear in textbooks in social science for lower secondary school in Norway. The new Norwegian 2020 curriculum aims to prepare the pupils for a society with increased globalization, and there is a strong emphasis on both sustainable development and citizenship. The citizenship does not only concentrate on the individual and national level, but also includes the global level. Global citizenship may be interpreted in different ways (Borgebund, 2022; Sæther, 2022). This study aims to show which descriptions of global citizenship are included in the textbooks.

Børhaug (2021) has discussed what education for democracy may be in the face of processes that are framed by globalisation, and he is pointing at important didactic choices to be made, which also concern global citizenship. Another aspect of citizenship education is: Who is the global citizen? A concept of global citizenship implies some sort of amalgamation of individuals, a “national we” and “the others”. Thus, it is interesting to see which representations of “the others” that can be traced in the textbooks compared to “the national we”. A possible imbalance will affect how the global citizenship is to be understood.

The analysis, which will be a qualitative content analysis, is yet to be performed, but possible dimensions are conflict vs. harmony and individual vs. collective actors. Based on other studies, “the peaceloving Norway” may also appear as a contrast to “a world of conflicts” (Vesterdal, 2022).

Textbooks have traditionally played an important role in interpreting and implementing the curriculum (Børhaug, 2019). Although digital teaching material partly replace and supplement textbooks, these books still have a strong impact on the education. Therefore, it is of interest to analyse these texts.

Keywords: Global citizenship, Social science

References

- Borgebund, H. (2022). Globalt medborgerskap. In K. Børhaug, O.-R. Hunnes, & Å. Samnøy (Eds.), *Nye spadestikk i samfunnsfagdidaktikken* (pp. 215–230). Fagbokforlaget.
- Børhaug, K. (2019). Watching, assessing, participating. Globalising political education in Norwegian upper secondary education. *Nordidactica*, 9(1), 17–35.
<https://journals.lub.lu.se/nordidactica/article/download/19947/17996>
- Børhaug, K. (2021). Opplæring for demokrati i ei globalisert verd. In T. Solhaug (Ed.), *Skolen i demokratiet – demokratiet i skolen* (2nd ed., pp. 163–183). Universitetsforlaget.
- Sæther, E. (2022). Miljø og medborgerskap – Hva betyr det å være medborger når kloden koker? In K. Børhaug, O.-R. Hunnes, & Å. Samnøy (Eds.), *Nye spadestikk i samfunnsfagdidaktikken* (pp. 197–214). Fagbokforlaget.
- Vesterdal, K. (2022). “De må våkne litt!” Lærerperspektiver på global læring i den videregående skolen. *Nordisk tidsskrift for pedagogikk og kritikk*, 8, 12–28. <https://doi.org/10.23865/ntpk.v8.3490>

Advancing students' reasoning on democracy: Reflections from a project on political trust

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Schools in general, and social science education in particular, prepare youth for life in democracies. Teaching, especially in the social sciences, is expected to advance students' knowledge and to socialise them into becoming active and critical citizens with democratic behaviours and attitudes (Sandahl, 2015). However, there are challenges for teachers in realizing these aims such as dealing with: tensions between thinking critically while being socialized, the trend of diminishing support for democracy among youths, and fading social and political trust in many countries. This paper reports on a research project (financed by the Swedish research council, grant number 2019-03439) that departed from the important role of political trust in democracies (cf. Warren, 2018). The project was carried out as participatory action research in the context of Educational Design Research (EDR, see van den Akker, 2013) with social science teachers.

The paper addresses three areas with contributions to social science education (samhällskunskap). First, we suggest educational gains from displacing democracy from traditional content areas, i.e., how students' reasoning about democracy benefit from engaging with democracy in other contexts than that of the structures of the political system (cf. Carr, 2008) and gives both critical and legitimizing perspectives on trust in democracy. Second, we reflect on how teaching designs can provide new experiences and specific reasoning skills to students, particularly the significance of introducing social science theory in the teaching. Third and lastly, we address the potential gains of collaborations between teachers and researchers in performing EDR, and how it can contribute with theoretical and practical knowledge that is relevant for academia, as well as for teachers' practice.

Keywords: Social Science education, Democracy education, Trust

References

- Carr, P. (2008). Educators and education for democracy: Moving beyond "thin" democracy. *Interamerican Journal of Education for Democracy*, 1(2), 147–165.
- Sandahl, J. (2015). *Medborgarbildning i gymnasiet: ämneskunnande och medborgarbildning i gymnasieskolans samhälls- och historieundervisning*. Stockholms universitet.
- van den Akker, J. (2013). Curricular Development Research as a Specimen of Educational Design Research. In T. Plomp & N. Nieveen (Eds.), *Educational Design Research*. SLO, Netherlands institute for curriculum development.
- Warren, M. (2018). Trust and Democracy. In E. M. Uslaner (Ed.), *The Oxford handbook of social and political trust* (pp. 75–94). Oxford University Press.

Upper secondary students' conceptions of the carbon cycle

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Basic understanding of the carbon cycle is a prerequisite for understanding the processes resulting in anthropogenic climate change. Knowledge about climate change is one of the factors contributing to climate action, even though the relationship between knowledge and action is not linear and there are also many other contributing factors (Kolenatý et al., 2022; Stevenson et al., 2018). Moreover, the relationship between the factors is very complex. The carbon cycle is also very complex, involving different levels of biological organization and comprising several physiological processes (photosynthesis, cellular respiration and decomposition) and different trophic levels. Previous research has shown that there are various misconceptions related to the carbon cycle among students (Hartley et al., 2011) and more research in this area of science education is called for (Düsing et al., 2019).

The aim of this study is to investigate upper secondary students' conceptions of the carbon cycle. Semi-structured interviews were conducted in order to explore what kind of conceptions of the carbon cycle students hold. Drawings were used as a starting point for the interview. Seven Finnish upper secondary students participated in the interview. The interview data were analyzed by content analysis. Initially, the carbon cycle was divided into separate components and, a rough categorization was made of the conceptions on three levels. The next step was to categorize the different conceptions for each component and level.

The results show that three of the seven students described a complete carbon cycle with all the components included. However, none of the students held completely correct conceptions regarding all of the components. Several categories of conceptions were identified.

Keywords: Science education, Conceptions of the carbon cycle, Upper secondary students

References

- Düsing, K., Asshoff, R., & Hammann, M. (2019). Students' conceptions of the carbon cycle: identifying and interrelating components of the carbon cycle and tracing carbon atoms across the levels of biological organization. *Journal of Biological Education*, *53*(1), 110–125. <https://doi.org/10.1080/00219266.2018.1447002>
- Hartley, L. M., Wilke, B. J., Schramm, J. W., D'Avanzo, C., & Anderson, C. W. (2011). College students' understanding of the carbon cycle: contrasting principle-based and informal reasoning. *BioScience*, *61*(1), 65–75. <https://doi.org/10.1525/bio.2011.61.1.12>
- Kolenatý, M., Kroufek, R., & Cincera, J. (2022). What triggers climate action: The impact of a climate change education program on students' climate literacy and their willingness to act. *Sustainability*, *14*, 10365. <https://doi.org/10.3390/su141610365>
- Stevenson, K.T., Nils Peterson, M., & Bondell, H. D. (2018). Developing a model of climate change behavior among adolescents. *Climate Change*, *151*, 589–603. <https://doi.org/10.1007/s10584-018-2313-0>

Subject Didaktik as Knowledge Field

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Subject didaktik as a field has contact points to (1) other educational sciences such as general didactics, pedagogy, pedagogical work and educational studies, (2) the school subject / subject area, and (3) teaching practice (e.g., Cramer & Schreiber, 2018; Sjöström, 2018). Many subfields of subject didaktik have in recent decades evolved from experience-based methodology to quite independent research fields. This applies, for instance, to “science didaktik” (“naturvetenskapernas didaktik” in Swedish and “Science Education” in English), which in Sweden has developed since the mid-1980s. Over the past twenty years, the country has got many new doctors and professors within this (sub)field. I am especially at home in Science Education, but am also very interested in general aspects of subject didaktik (e.g., Sjöström, 2017; Vollmer, 2021).

Six years ago, at NoFA6 in Odense, I first presented a framework with ten analysis areas to be used to analyze and develop subject didaktik in whatever subject area (Sjöström, 2017; 2018). These ten areas are about: 1) subject didaktik research especially in the specific school subject area; 2) meta-perspectives on the subject area; 3) meta-perspectives on the school subject; 4) culture and traditions of the school subject; 5) students’ relationship to the subject (area); 6) teachers’ (and student teachers’) relationship to the subject (area); 7) common praxis in the school subject: teaching, learning and assessment (concepts, values, aesthetics, curriculum emphases, proven experience, textbooks, classroom communication, assessment practice, etc.); 8) alternative didactical choices; 9) “cross-curricular goals” (e.g., eco-reflexive *Bildung*, sustainability etc.); and 10) didaktik modelling (for the latter, see for instance Sjöström, 2022). In this paper I will present an updated version of the framework, developed based on recent literature in the area.

Keywords: General subject didactics, Knowledge field

References

- Cramer, C., & Schreiber, F. (2018). Subject didactics and educational sciences: Relationships and their implications for teacher education from the viewpoint of educational sciences. *RISTAL: Research in Subject-matter Teaching and Learning*, 1, 150–164.
- Sjöström, J. (2017). *General subject didactics – core knowledge and perspectives*. Presentation at Nordisk ämnesdidaktisk konferens (NoFA), May 29–31, Odense, Denmark. (pp. 136–138 in the abstract book)
- Sjöström, J. (2018). Didaktik i integrativa lärarprofessionsämnen. *Studier i læreruddannelse og – profession*, 3(1), 94–119. doi:10.7146/lup.v3i1.97571
- Sjöström, J. (2022). Didaktik modelling illustrated by sustainability teaching arrangements in preschool. *Educare*, (2), 249–280. doi:10.24834/educare.2022.5.8
- Vollmer, H. J. (2021). Powerful educational knowledge through subject didactics and general subject didactics. Recent developments in German-speaking countries. *Journal of Curriculum Studies*, 53(2), 229–246.

Listening in L1

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The presentation is based on my PhD project which is an investigation of how listening can qualify the students' academic performance and opportunities for participation in L1. Good listening comprehension is a prerequisite for being able to participate actively in the conversational culture of the subject and the academic teaching (Høegh, 2018). Listening is the central activity for students throughout the school system and thus an important educational competence but listening as an integrated part of oracy in the school and in L1 is “didactically non-existent” (Adelmann, 2012).

Listening contains both a cognitive and a sociocultural perspective (Otnes, 2016). In this project, the focus on listening is based on a social meaning – “listening to” something, e.g., listening attentively to a speech, and “listening with attention and empathy” in dialogue with others. The purpose of the project is to identify, characterize and understand academic situations in L1 where listening takes place in order to contribute to a didactic understanding of orality in L1 with listening as a privileged perspective.

The presentation is based on the following RQ:

- How do students understand themselves as listening participants in L1 in elementary school? – and why is that so?

As a knowledge base, video recordings are chosen as the key method, as language, both verbal and non-verbal, has research relevance. By using video stimulated recall, it becomes possible to describe language and behavioral markers that document that (or if) listening takes place and in what way it takes place based on the students' perspective, interviews, classroom- and video observations and video-stimulated-recall protocols with specially selected focus students.

Analytical findings are presented based on cases in L1. It is shown how students experience being part of different listening situations (e.g., grammar teaching, literature discussions and instructions) as well as which factors inhibit and qualify their listening in L1.

Keywords: Listening, Listening competence, L1 didactic

References

- Adelmann, K. (2009). *Konsten att lyssna* [The art of listening]. Studentlitteratur.
- Adelmann, K. (2012). The Art of Listening in an Educational Perspective: Listening reception in the mother tongue. *Education Inquiry*, 3(4) 513–534.
- Høegh, T. (2018). *Mundtlighet og fagdidaktik* [Oracy and Subject Specific Pedagogy]. Akademisk Forlag
- Otnes, H. (2016). Lyttehandlinger og lytteformål [Listening Acts and Listening Purposes]. In K. Kverndokken (Ed.), *101 måter å fremme muntlige ferdigheter på – om muntlig kompetanse og mundtlighetsdidaktik* (pp. 71–88). Fagbokforlaget.
- Skov, L. I. (2018). At lytte for at lære – et deltagerorienteret perspektiv på lytning i skolen. In *Viden om literacy 23: At tale for at lære*. National Videncenter for læsning.

Quality in Inquiry based mathematics in secondary school

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Observation of quality in teaching has been the subject of increased attention in recent research (Agergaard & Graf, 2022), yet it is important to approach the quality of teaching from several perspectives (Elf, 2019).

In connection with the project *KiDM* (Quality in the subjects Danish (L1) and Mathematics), a multidimensional model for understanding quality was developed (Elf, 2019; Hansen, 2022). It consists of three perspectives that addresses quality prospectively, presently and retrospectively and in different contexts: Prescribed quality, Experienced quality and Documented quality.

The prescribed quality relates to research findings and institutional conventions and norms, i.e., curricula standards. The experienced quality relates to specific teachers and students experiences in the context of teaching. Finally, the documented quality relates to observations and findings connected quantitative and qualitative studies of teaching and student learning, i.e., PLATO (Protocol for Language Arts Teaching Observations) (Grossmann et al., 2013).

In this study, which is a part of the 2-year project *Faglige udviklingsskoler* (Lab Schools). Together with four experienced secondary mathematics teachers, one with a supervisory position in mathematics, we design, perform and reflect on interventions concerning inquiry-based mathematics (Artigue & Blomhøj, 2013). Our research question is: How is quality expressed in inquiry-based mathematics from the perspective of prescribed, experienced and documented quality for secondary mathematics teachers? Our empirical data includes six videotaped and transcribed lessons, as well as notes from eight meetings with the teachers. The data has been thematically coded with respect to the perspectives of quality and the lessons are coded with respect to the PLATO observation system.

Preliminary results show the teachers find inquiry-based mathematics relevant and interesting with respect to the prescribed perspective of quality, yet in the experienced and documented perspective several challenges and insecurities emerges for the teachers.

Keywords: Quality in mathematics, Inquiry based learning

References

- Agergaard, K., & Graf, S. T. (2022). At observere undervisningskvalitet. *Studier i læreruddannelse og -profession*, 7(2), 22. <https://doi.org/10.7146/lup.v7i2.132893>
- Artigue, M., & Blomhøj, M. (2013). Conceptualizing inquiry-based education in mathematics. *ZDM*, 45(6), 797–810. <https://doi.org/10.1007/s11858-013-0506-6>
- Elf, N. (2019). Kvalitet i undervisningen – hvad forstår vi egentlig ved det? *GymPæd 2.0*, 12–15.
- Grossman, P., Loeb, S., Cohen, J., Hammerness, K., Wyckoff, J., Boyd, D., & Lankford, H. (2013). Measure for Measure: The relationship between measures of instructional practice in middle school English Language Arts and teachers' value-added scores. *American Journal of Educational Research*, 119(3), 445-470. <https://doi.org/10.1086/669901>
- Hansen, T. I. (in review). Kvalitetens kvalitet i undervisningen.

The teaching of writing in theory and practice at teacher education programs in Finland and Sweden

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Writing is central to pupils' education, employment, meaningful lives, and for citizenship in a global world. In school, pupils need to enhance writing proficiency in different school subjects, as writing is not a generic competence but disciplinary specific. Teacher education is a crucial instance to prepare for teaching in the 21st century. However, there is a dilemma in teacher education concerning how to integrate theory and practice (Darling-Hammond, 2014). Therefore, an important challenge is to prepare student teachers for their future teaching of writing based on theory of discourses of writing (Ivanič, 2004; 2017) and multimodal theories (Kress, 2010), understood in practice.

This paper presents insights from a pilot study in primary teacher education programs at two universities, in Finland and in Sweden. In the pilot study, a model for Reflective Observation of School writing (ROS model; Sturk, 2022) has been used with the aim to prepare student teachers for the teaching of writing across disciplines. The ROS model was implemented in the fall of 2022 and included lectures, seminars, and classroom observations in school practice. The data used in this presentation are student teachers' examinations and answers on a questionnaire, and three university lecturers' research notes.

Preliminary results suggests that there are benefits and challenges with the model. The ROS model has potential to provide the student teachers with tools to analyze and reflect over the teaching of writing, and the reflective seminar seemingly provides the student teachers a scaffolded opportunity to develop a common terminology to talk about the teaching of writing across disciplines. We are interested in discussing challenges, e.g., student teachers' challenge to read theoretical articles; framing of multimodal perspectives on writing; student teachers as observers in classroom studies. This will help us to develop the research project.

Keywords: Teacher education, Teaching of disciplinary writing, Discourses of writing

References

- Darling-Hammond, L. (2014). Strengthening Clinical Preparation: The Holy Grail of Teacher Education. *Peabody journal of education*, 89(4), 547–561.
- Ivanič, R. (2004). Discourses of Writing and Learning to Write. *Language and Education*, 18(3), 220–245. [doi:10.1080/09500780408666877](https://doi.org/10.1080/09500780408666877)
- Ivanič, R. (2017, May 4–5). Round table on discourses of writing, and writer identity. [Conference session]. LITUM symposium, Umeå, Sweden.
- Kress, G. (2010). *Multimodality: A social semiotic approach to contemporary communication*. Routledge.
- Sturk, E. (2022). *Writing across the curriculum in compulsory school in Sweden*. [Doctoral dissertation, Umeå University].

Finnish biology teachers' perception and use of content representation (CoRe)

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Content representation (CoRe) is a pedagogical tool that can be used by researchers to study, develop, and document pedagogical content knowledge (PCK) (Loughran et al., 2004). Previous studies have shown that the use of CoRe in a teacher education context can develop PCK and teaching skills among teacher students (Hume & Berry, 2011; Juhler, 2016).

The aim of this study was to test the CoRe tool in a Finnish context, to explore what kind of knowledge is exposed about teaching a biology core idea (One group of living organisms use energy from the sun to produce nutrition that all other living organisms depend on as an energy source), and to evaluate whether the tool could be useful in a subject teacher education context. Seven lower and upper secondary in-service biology teachers participated in the study by completing the questions in the CoRe tool and by sharing their thoughts about the tool and the core idea afterwards.

The material was gathered with a grounded theory approach and analyzed using thematic analysis. Data reveals that teachers consider energy, biochemical reactions, and the roles of different organisms in the ecosystem as the most central content in the core idea. Concepts like energy, photosynthesis, cell respiration and (in)organic molecules are at the same time considered as the most challenging in teaching.

The tool identified shared content ideas as well as teaching challenges and experiences by the teachers in the study. One conclusion is that CoRe can function as a starting point for didactical discussions and teaching reflections linking theory with practice.

Keywords: Content representation (CoRe), Pedagogical content knowledge (PCK), Biology

References

- Hume, A., & Berry, A. (2011). Constructing CoRes — A Strategy for Building PCK in Pre-service Science Teacher Education. *Research in Science Education*, 41(3), 341–355. <https://doi.org/10.1007/s11165-010-9168-3>
- Juhler, M. V. (2016). The Use of Lesson Study Combined with Content Representation in the Planning of Physics Lessons During Field Practice to Develop Pedagogical Content Knowledge. *Journal of Science Teacher Education*, 27(5), 533–553. <https://doi.org/10.1007/s10972-016-9473-4>
- Loughran, J., Mulhall, P., & Berry, A. (2004). In search of pedagogical content knowledge in science: Developing ways of articulating and documenting professional practice. *Journal of Research in Science Teaching*, 41(4), 370–391. <https://doi.org/10.1002/tea.20007>

Conceptual change and sustainability education in Biology

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Global sustainability challenges demand changes in science education curricula, research and practice. Our presentation discusses the need to rethink learning and teaching of scientific concepts, particularly in biology, due to the emerging Vision III of science education (Sjöström et al., 2017) promoting agency, transformation and Bildung. The ecological crisis shows that the definitions and interpretations of certain biology concepts require revision. Conceptual change research tradition examines the transformation of concepts and their meanings from the viewpoint of paradigm shift (Vosniadou, 2013). As a scientific paradigm changes, old concepts receive new meanings and new concepts become necessary.

In this presentation, we suggest that certain concepts that are central in biology curricula (e.g., Finnish National Agency for Education, 2014) require such elaboration. The concept of sustainability is used in different contexts, but the definition remains often vague. There exists two nearly contrary approaches for sustainability, so called weak and strong sustainability (Heikkurinen, 2014). The perspective of strong sustainability assumes that the human life and activities are severely restricted by the planetary boundaries and that economic and environmental capital are complementary, but not interchangeable. This idea fundamentally differs from the weak definition that assumes that for example technological progress generates solutions to environmental problems. In addition, the concepts of natural resources and ecosystem services carry the similar meaning of detachment of human and nature, viewing the nature as a resource for humans. Thus, we suggest the paradigm shift in sustainability requires conceptual changes related to several concepts in different levels. This should have an impact on concepts teaching in biology education, where children and adolescents should achieve an adequate conceptual understanding to become agents of change in line with Vision 3 of science education. We also argue that they should also become aware of the role of concepts in determining the perspective.

Keywords: Sustainability education; Biology education; Conceptual learning

References

- Heikkurinen, P. (2014). Kestävyyden käsitteen ulottuvuudet. *Tieteessä Tapahtuu*, 32(4).
<https://journal.fi/tt/article/view/46149>
- Finnish National Agency for Education (2014). National core curriculum for basic education. National Agency for Education.
- Sjöström, J., Frerichs, N., Zuin, V., & Eilks, I. (2017). Use of the concept of Bildung in the international science education literature, its potential, and implications for teaching and learning. *Studies in Science Education*, 53(2), 165–192. <https://doi.org/10.1080/03057267.2017.1384649>
- Vosniadou, S. (2013). Conceptual change in learning and instruction – The Framework Theory Approach. In S. Vosniadou (Ed.), *International handbook on conceptual change research* (2nd ed., pp. 11–30). Routledge.

Pre-service teachers' species identification skills – an eye-movement study

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Species knowledge and identification skills are important goals of biodiversity learning in science and sustainability education. However, previous research has shown that many pre-service teachers have rather poor species identification skills. A crucial question is how species' external characteristics are observed and if the way of observing is relevant for identification.

The aim of this study was to investigate pre-service teachers' identification process of plant species images from the computer screen and to compare whether there are differences between pre-service teachers with different educational background. Five primary school pre-service teachers and five secondary school pre-service biology teachers participated in the study. The participants' prior plant identification skills were measured with the identification test and the assignments suggesting application of knowledge. The perception data were collected using the eye-tracking method and the eye movements were recorded with Tobii ProSpectrum. In general, all pre-service teachers perceived the images of ten plant species in similar ways. The identification skills of primary school pre-service teachers on plants turned out to be substantially lower than the skills of the secondary school pre-service biology teachers.

The results showed that the groups differed from each other in how they made observations on plants. In general, secondary school biology pre-service teachers used more time on task and examined plants more systematically by looking all parts of the plants, whereas primary school pre-service teachers more frequently looked at the most prominent plant parts, for instance large or colourful flowers and leaves.

The results are in line with previous studies, but provide important new knowledge, because no previous research regarding the plant observation behaviour has been published. The results suggest that in teacher education, especially primary school pre-service teachers would benefit from learning more on species identification and how to systematically observe different features of plants.

Keywords: Species identification, Biodiversity education, Eye-tracking

References

- Homqvist, K., Nyström, M., Andersson, R., Dewhurst, R., Jarodzka, H., & Van De Weijer, J. (2017). *Eye tracking: A comprehensive guide to methods, paradigms and measures*. Oxford University Press.
- Kaasinen, A. (2019). Plant Species Recognition Skills in Finnish Students and Teachers. *Education Sciences*, 9, 85. <http://dx.doi.org/10.3390/educsci9020085>
- Palmberg, I., Berg, I., Jeronen, E., Kärkkäinen, S., Norrgård-Sillanpää, P., Persson, C., Vilkonis, R., & Yli-Panula, E. (2015). Nordic-Baltic Student Teachers' Identification of and Interest in Plant and Animal Species: The Importance of Species Identification and Biodiversity for Sustainable Development. *Journal of Science Teacher Education*, 26(6), 549–571. <https://doi.org/10.1007/s10972-015-9438-z>
- Södervik, I., & Vilppu, H. (2021). Case Processing in the Development of Expertise in Life Sciences – What Can Eye Movements Reveal? In I. Devetak & S. A. Glažar (Eds.), *Applying bio-measurements methodologies in science education research* (pp. 169–183). Springer International.
- Uitto, A., & Saloranta, S. (2017). Subject Teachers as Educators for Sustainability: A Survey Study. *Education Sciences* 7,8: 1–19. [doi:10.3390/educsci7010008](https://doi.org/10.3390/educsci7010008)

The role of disciplinary knowledge in student discussions: results from an intervention study in a Danish 8th grade Social Studies classroom

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Classroom discussions are often criticized for being 'mere talk' that does not sufficiently promote students' understanding of disciplinary knowledge and scientific concepts (e.g., Beck et al., 2014; Christensen, 2005; Sandahl, 2015). Yet, research on how teachers can promote students' use of disciplinary knowledge in classroom discussions is scarce. To address this shortcoming, the present study critically reflects upon the role of knowledge in student discussions and presents the results of a carefully planned classroom intervention study.

The study asked students to engage in a teacher-moderated discussion following their reading of four preparation materials pertinent to two assigned discussion topics: (1) whether Donald Trump could postpone the 2020 US presidential election; and (2) whether Western democracies are in crisis and can be improved. Data were collected through video observation and subjected to mixed method analysis. While students often made references to the information in the preparation materials or general scholastic knowledge (20.2% of discussion turns), references to personal experiences were much less pronounced (7.2% of discussion turns).

Under favorable conditions, student discussion is, hence, not necessarily dominated by lifeworld knowledge and devoid of disciplinary knowledge. In today's world of scientific knowledge abundance, however, one might argue that the central question for Social Science Education is not how to make students refer to social scientific knowledge but how to support them in using this knowledge selectively and flexibly to build and defend arguments for their political opinions (e.g., Christensen, 2015). In my paper presentation, I will pursue this latter question further by elaborating on the results of the intervention study introduced above.

Keywords: Discussion, Knowledge, Argumentation

References

- Beck, S., Kaspersen, P., & Paulsen, M. (2014). *Klassisk og Moderne Læringsteori*. Hans Reitzels Forlag.
- Christensen, A. S. (2005). *Den demokratiske samtale: utilstrækkelig opdragelse til demokrati*. Retrieved [13.09.2022] from: <https://docplayer.dk/6501413-Den-demokratiske-samtale-utilstraekkelig-opdragelse-til-demokrati.html>
- Christensen, T. S. (2015). Fagopfattelser i samfundsfag – analytiske modeller. In T. S. Christensen (Ed.), *Fagdidaktik i Samfundsfag* (pp. 9-42). Frydenlund.
- Sandahl, J. (2015). Preparing for Citizenship: Second Order Thinking Concepts in Social Science Education. *J SSE – Journal of Social Science Education*, 19–30. <https://doi.org/10.4119/jsse-732>

Analyzing teaching quality. Capturing subject-generic, subject-specific, format-specific, and learning goal-specific features simultaneously

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Research on teaching effectiveness typically identifies aspects of teaching assumed to be critical for student learning, and then measure the relationship between those aspects and students' progress on narrowly defined subsets of skills, usually reading comprehension or mathematics. However, since theoretical frameworks developed in this way are seldom unanimously efficacious across school subjects, some researchers argue that subject-generic and subject-specific approaches need to be combined in order to explore teaching quality more thoroughly (Charalambous & Praetorius, 2022). While this may be fruitful, evidence also suggest that presumed subject-specific aspects may not even be equally efficient in different content-domains of single subjects, for instance, in literature instruction vs. writing instruction, or equally efficient for different subject-specific learning goals (Grossman et al., 2013; Tengberg, 2022).

For this reason, drawing on previous research using hybrid frameworks (Tengberg et al., 2022a), the present study proposes a slightly modified form of research framework for exploring teaching quality, one that combines subject-generic, subject-specific, format-specific, and learning goal-specific features. The model proposed acknowledges the fact that teaching in most subjects normally afford qualities of knowledge that are both subject-generic and highly specific within a single subject. The example used is taken from language arts, more precisely teacher-led whole-class discussions about complex short narratives. In order to identify and explore the specific qualities of this form of teaching, both generic and specific aspects must be considered. The protocol Rating Inquiry Dialogue about Literature (RIDL) was developed on these premises for observation of live or video-recorded classroom discussions (Tengberg et al., 2022b). In the presentation, RIDL is demonstrated and explained with emphasis on its multilevel scope. Data from recently finished and ongoing studies are used validate the utility of included variables. Suggestions for extended validation of the framework, and implications for practice, are also discussed.

Keywords: Discussions, Subject-specificity, Teaching quality

References

- Charalambous, C. Y., & Praetorius, A.-K. (2022). Synthesizing collaborative reflections on classroom observation frameworks and reflecting on the necessity of synthesized frameworks. *Studies in Educational Evaluation*, 75(1).
- Grossman, P., Loeb, S., Cohen, J., & Wyckoff, J. (2013). Measure for measure: The relationship between measures of instructional practice in middle school English language arts and teachers' value-added scores. *American Journal of Education*, 119(3), 445–470.
- Tengberg, M. (Ed.). (2022). *Undervisningskvalitet i svenska klassrum*. Studentlitteratur.
- Tengberg, M., Forssten Seiser, A., Wejrum, M., Evermark, M., & Pilfalk, M. (2022a). *Linking Instruction and Student Achievement – Professional Learning Observations of Teaching (LISA-PLOT)*. Huvudrapport. Institutionen för pedagogiska studier, Karlstads universitet.
- Tengberg, M., Johansson, M., Sønneland, M., Skar, G. B., Wejrum, M., & Biörklund, A. (2022b). *Inquiry dialogue to promote comprehension and interpretation. Effects of an intervention to improve the quality of teacher-led discussions about complex literary texts*. Paper presented at the ARLE Conference in Nicosia, Cyprus, June, 2022.

Supporting coherent science teacher education with observation webapp used for reflection

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In an international research project, we are developing coherent science teacher education. The project produces various tools for supporting lesson planning and reflection. Aim is to help preservice teachers (PSTs) apply pedagogical content knowledge into practice and engage PSTs in plan-teach-reflect cycles. This should support coherent science teacher education that then promotes coherent science instruction in schools (Nordine et al., 2021). Coherent science instruction supports students to make sense of phenomena by engaging them in scientific and engineering practices and supporting them to develop need-to-know attitude (Fortus & Krajcik, 2012). Use of core-ideas which are significant across science and engineering domains are emphasised. Our research group has developed a mobile webapp that helps save observations of classroom activities (Turkkila et al., 2021). This saved data can then be visualised as a timeline in order to support PSTs in their reflection during practical training. The activities to observe are based on the characteristics of coherent science instruction. PSTs become familiar with these characteristics during lectures and practice using the app before the practical training. As part of the reflection, the PSTs observe each other's practice lesson using the app.

The goal for using the app is threefold. First, it guides the PSTs to plan lessons according to the principles of coherent science instruction. Second, it activates and guides PSTs what to observe in each other's lessons. Finally, the timeline makes it visible what coherent science instruction activities there were in the lesson. The timeline serves as basis for post-lesson reflective discussion, giving structure to the reflection and helps focus on action. Overall, the tool supports PSTs' plan-teach-reflect cycles. In the presentation, we show how the use of the app produces reflection of classroom activities, we examine experiences from PSTs and teacher trainers and present a teaching module developed around the app.

Keywords: Science education, Coherence, Teacher training

References

- Turkkila, M., Vilhunen, E., Jauhiainen, J., & Juuti, K. (2021). Including Educational Research Practices in Teacher Education: Digital Application for Lesson Observations. *FMSERA Journal*, 4(1), 90–102.
- Fortus, D., & Krajcik, J. (2012). Curriculum coherence and learning progressions. In B. J. Fraser, K. Tobin, & C. J. McRobbie (Eds.), *Second international handbook of science education* (pp. 783–798). Springer Netherlands.
- Nordine, J., Sorge, S., Delen, I., Evans, R., Juuti, K., Lavonen, J., Nilsson, P., Ropohl, M., & Stadler, M. (2021). Promoting Coherent Science Instruction through Coherent Science Teacher Education: A Model Framework for Program Design. *Journal of Science Teacher Education*, 32(8), 911–933.

Teaching that enables discernment of impact, systems thinking and agency in social science visual literacy

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Civic education includes the ability to understand and deal with complex social issues and systems that are often difficult for students to grasp (Hess, 2009), and commonly represented in visual models which often seem hard for students to understand (Roberts & Brugar, 2017). This presentation describes findings from the final phase of a three-year practise-based project where implications of and teaching principles for developing students' visual literacies in social studies were explored. Previous results have shown that in order to understand and read models, students in primary, lower secondary and upper secondary school need to discern aspects of impact, systems thinking and agency.

The results discussed in the presentation consist of teaching principles, based on phenomenography and variation theory, that seem to facilitate students' discernment of those aspects. The principles were identified through analysis of pre- and post-tests, transcribed group discussions and filmed lessons from 17 teaching interventions with 300 students of different ages. Tentative results indicate that it is possible and relevant to introduce social science models such as plot diagrams and flowcharts as early as in primary school, but that there is a need for teaching that facilitates a more complex understanding of these models well up into upper secondary school.

The design principles identified seem to support students' discernment of critical aspects of the models and thus more complex reasoning of the societal issues and systems illustrated. Nevertheless, results indicate that it is pivotal that also students who have discerned all of the aspects identified as critical for understanding a model, also encounter teaching that creates a need for, or motive of, multidimensional causal analysis of the social issue and critical judgement of social systems. Also, contextual/content specific knowledge emerges as a key dimension for high quality reasoning about social issues and systems using visual models.

Keywords: Social science, Teaching development, Design principles

References

- Hess, D. E. (2009). *Controversy in the Classroom: The Democratic Power of Discussion*. Routledge.
- Roberts, K. L., & Brugar, K. A. (2017). The View from here: emergence of graphical literacy. *Reading Psychology*, 38, 733–777. doi:10.1080/02702711.2017.1336661

Reading Diploma as a Pedagogical Tool for Reading Engagement

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According to the national as well as international tests, the amount of weak readers and the variety of reading skills is growing among Finnish students (Kauppinen & Marjanen, 2020; Leino et al., 2019). This presentation is based on a project Lukeva Salo (Reading Salo). Lukeva Salo is a two-year project started August 2020 in the city of Salo in Finland. The aim of the project was to support educators and families in their attempts to promote students' reading. One of the aims of the project was to enable all students to read 30 minutes daily as many international studies recommend (PIRLS 2016; PISA 2018). To help as many students as possible to reach that goal, a reading challenge called the Salonen Reading Diploma was introduced. In the challenge, the students are encouraged to read a certain number of books in order to reach the diploma. In general, reading diplomas are popular pedagogical tools at Finnish schools (Ihalainen & Vainio-Mattila, 2004; Miettinen, 2018.)

This presentation focuses on investigating how the teachers use the reading diploma as a part of their pedagogy and what kind of pedagogical support they give to their students. The data presented in this study has been collected via online questionnaires from six 3rd grade and 7th grade teachers in the school year 2021–2022.

The results show that teachers use diverse methods in relation to the reading diploma activity and there are a lot of creative methods for getting engaged with the texts. Teachers choose the reading diploma as a pedagogical tool to increase students' reading during their free time, to improve students' reading skills and to expand their knowledge in literature. About half of the teachers use the reading diploma as a compulsory task and half of the teachers as a voluntary activity. It seems that reading challenges like reading diplomas give the teachers possibility to make pedagogical choices in their implementation.

The presentation will be given in Finnish.

Keywords: Literature lessons, Reading diploma, Reading instructions

References

- Ihalainen, A.-M., & Vainio-Mattila, S. (2004). Lukupiiri – kiva kun saa lukea yhdessä kavereiden kanssa. In H. Linna (Ed.), *Luokat lukemaan!* (pp. 65–74). Tammi.
- Kauppinen, M., & Marjanen, J. (2020). *Millaista on yhdeksäsluokkalaisten kielellinen osaaminen? – Suomen kielen ja kirjallisuuden oppimistulokset perusopetuksen päättövaiheessa 2019*. Kansallinen koulutuksen arviointikeskus 13:2020.
- Leino, K., Ahonen, A. K., Hienonen, N., Hiltunen, J., Lintuvuori, M., Lähteinen, S., Lämsä, J., Nissinen, K., Nissinen, V., Puhakka, E., Pulkkinen, J., Rautopuro, J., Sirén, M., Vainikainen, M.-P., & Vettenranta, J. (2019). *PISA 18: ensituloksia. Suomi parhaiden joukossa*. Opetus- ja kulttuuriministeriö. Opetus- ja kulttuuriministeriön julkaisuja.
- PIRLS. (2016). <http://timssandpirls.bc.edu/pirls2016>

The Didactics of Philosophy in Sweden

Olle Uppenberg, Uppsala University, Sweden

The scientific field of the didactics of philosophy is weakly developed in a northern European context, with a few exceptions (Petersson, 2021; Schaffar, 2013; Tomperi, 2017). Therefore, the aim of my research is to develop a fundamental conceptual apparatus for the didactics of the philosophy subject. My two main studies in this project are an interview study with philosophy teachers and a questionnaire study with philosophy students. In the interview study, 12 Swedish philosophy teachers told about their understanding of the subject and their teaching. The interviews were analyzed in accordance with the grounded theory of Kathy Charmaz (2006). The following themes emerged as particularly interesting after a thorough review of the material:

- The subject content of philosophy
- Philosophical skills
- Argumentation
- Student trends: postmodernism, opinion relativism and loose blathering
- Independence and bildung
- The usefulness and uniqueness of philosophy

The themes above are perceived as central orientation points for Swedish philosophy teachers.

As mentioned, the second study is a questionnaire study with philosophy students (in the Swedish upper secondary school). With the help of two questionnaires – one that is answered before studied course, and one that is answered after studied course – approximately 300 students have told about their perception of the philosophy subject, what they expect from the subject and (in the post-survey) what they have learned. At the time of writing, the post-survey has not yet been carried out.

An interesting first result from the student survey is that the students differ from the teachers in their understanding of the subject on several points. Among other things, in view of argumentation, subject content and critical thinking. At Nofa9, I want to present my preliminary results and I look forward to a discussion on how I can develop the study into a doctoral thesis.

Keywords: Didactics of Philosophy, Philosophy teaching, Teachers' subject conception, Students' subject conception

References

- Charmaz, K. (2006). *Constructing grounded theory: A practical guide through qualitative analysis*. SAGE.
- Petersson, T. (2021). *Filosofididaktik: Filosofiundervisning i teori och praktik*. NA förlag.
- Schaffar, B. (2013). *Filosofins didaktik: Filosofiska betraktelser om att lära sig att tänka*. Thales.
- Tomperi, T. (2017). *Filosofianopetus ja pedagoginen filosofia – filosofia oppiaineena ja kasvatuksena*. Eurooppalaisen filosofian seura ry.

Promoting continuity in science education through transition to secondary school: Findings from a formative intervention

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Student interest and learning in science has been suggested to decrease after students move to secondary school (Anderhag, 2016; Braund, 2016). One possible reason is content repetition stemming from a lack of recognition of students' previous experiences and knowledge in science (Braund, 2016). To enable discussions between teachers, we developed a professional development program in collaboration with a group of science teachers from primary (two) and secondary school (two). An educator from a local science center also participated in the project to broaden the perspective. The study was designed as a formative intervention, promoting expansive learning and transformative agency among participants (Sannino et al., 2016). We organized five events which included collaborative planning by using a tool (CoRe) to articulate the subject content to be taught (Loughran et al., 2004). Two of these events were open for other teachers to participate in. Research data was gathered through audio recordings of meeting discussions, group interviews and individual interviews with the teachers and science center representative.

The present study explored the opportunities and obstacles to continuity in science education that surfaced during a collaboration between teachers from different grade levels. Results indicate that teachers found CoRe useful for them, since it strengthened their agency and reflexivity which was considered useful during content discussions. Further, the tool induced reasoning around the term “progression”, for example whether the move from writing the photosynthesis reaction using words, to using chemical symbols represented a progression. If so, what kind of development in student understanding did this progression facilitate? The findings suggest that the meaning of progression in relation to continuity in science education needs further investigation, for example during continued collaboration in formative interventions.

Keywords: Transitions, Science education, Content representation

References

- Anderhag, P., Wickman, P.-O., Bergqvist, K., Jakobson, B., Hamza, K.M., & Säljö, R. (2016). Why Do Secondary School Students Lose Their Interest in Science? Or Does it Never Emerge? A Possible and Overlooked Explanation. *Science education*, 100(5), 791–813.
- Braund, M. (2016). Oh no, not this again! Improving continuity and progression from primary to secondary science. *The School Science Review*, 362, 19–26.
- Loughran, J., Mulhall, P., & Berry, A. (2004). In search of pedagogical content knowledge for science: Developing ways of articulating and documenting professional practice. *Journal of Research in Science Teaching*, 41, 370–391.
- Sannino, A., Engeström, Y., & Lemos, M. 2016. Formative Interventions for Expansive Learning and Transformative Agency. *The Journal of the learning sciences*, 25(4), 599–633.

Meaningful thinking skills and knowledge dimensions in Finnish basic education geography in grades 3–9

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According to the Finnish National Core Curriculum (FNCC) for basic education, 9–12-year-old pupils are studying geography as part of the environmental studies, while 13–15-year-olds are studying geography as a named subject (Finnish National Board of Education [FNBE], 2016). Geography education research has already shed light on the meaningful thinking skills and knowledge dimensions of the learning objectives of geography at the general upper secondary school (Virranmäki, 2022; Virranmäki et al., 2021).

The aim of this paper is to evaluate what kind of meaningful thinking skills and knowledge dimensions are found from the geography learning objectives and assessment criteria in the FNCC for basic education (FNBE, 2016) in grades 3 to 9. Our findings will enlighten whether the learning objectives in environmental education at grades 3–6 differ from the learning objectives in geography at grades 7–9, and what kind of continuum the learning objectives create for developing thinking skills and knowledge dimensions. In the article, we also examine how the development of thinking skills and knowledge dimensions can be seen in the national assessment criteria for numerical grades 5 to 9 applied at the end of grades 6 and 9 (FNBE, 2020). The revised version of Bloom's taxonomy is used as a framework for the content analysis.

The preliminary analysis indicates that in environmental education (grades 3–6) the objectives are created to enhance pupils' competence to recognize the development of their own thinking which indicates a strong emphasis on metacognitive knowledge dimension. Whereas, thinking skills and knowledge dimensions at grades 7–9 emphasizes understanding conceptual knowledge. With this holistic approach on the geography objectives in Finnish National Core Curriculum for Basic Education (FNBE, 2016) we wish to present the meaningful thinking skills and knowledge dimensions to make them more distinguished and accessible in the field of geography education.

Keywords: Basic education, Meaningful geographical knowledge, Geography curriculum

References

- Finnish National Board of Education. (2016). *National Core Curriculum for Basic Education 2014*. Finnish National Board of Education.
- Finnish National Board of Education. (2020). *Perusopetuksen päättöarvioinnin kriteerit*. Opetushallituksen määräys OPH-5042-2020. https://www.oph.fi/sites/default/files/documents/Perusopetuksen%20p%C3%A4%C3%A4tt%C3%B6arvioinnin%20kriteerit%2031.12.2020_0.pdf
- Virranmäki, E., Valta-Hulkkonen, K., & Pellikka, A. (2021). Geography curricula objectives and students' performance – enhancing the students' higher-order thinking skills? *Journal of Geography*, 120(3), 97–107. <https://doi.org/10.1080/00221341.2021.1877330>

Virranmäki, E. (2022). Geography's ability to enhance powerful thinking skills and knowledge [Doctoral dissertation, University of Oulu]. *Nordia Geographical Publications*, 51(1), 1–78.
<https://doi.org/10.30671/nordia.113997>

Analyzing physics argumentation in the university level science education

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Learning argumentation and its skills are central goals for science education (Fischer et al., 2014). Domain-general argumentation has been noted to be an important generic skill, but it needs to be practiced in domain-specific context. We discuss here how domain-specific argumentation and skills related to it can form part of learning science in higher education. There are abundance of argumentation analysis frameworks and most of them are based on Toulmin's (1957/2003) account. For the goals of learning physics in higher education, the use of empirical evidence is central, but attention needs to be paid to deductive knowledge formation using previous theory as well. In this study, we analyze pre-service physics teachers' written reports (N=36).

We introduce here four argumentative moves that can be used to analyze physics knowledge argumentation (cf. van Lacum et al., 2014). The analysis allows us to detect what kind of argumentative episodes pre-service physics teachers use in their explanations. The analysis shows that the analysis method is capable of discerning argumentative episodes, and the results reflect that there are remarkable differences between pre-service physics teachers' abilities to construct coherent arguments. We conclude that explicit teaching of argumentation may help pre-service teachers to improve their abilities to construct coherent arguments.

Keywords: Argumentation, Physics, Teacher education

References

- Fischer, F., Kollar, I., Ufer, S., Sodian, B., Hussmann, H., Pekrun, R., Neuhaus, B., Dorner, B., Pankofer, S., Fischer, M., Strijbos, J.-W., Heene, M., & Eberle, J. (2014). Scientific reasoning and argumentation: advancing an interdisciplinary research agenda in education. *Frontline Learning Research*, 2(3), 28–45.
- van Lacum, E. B., Ossevoort, M. A., & Goedhart, M. J. (2014). A Teaching Strategy with a Focus on Argumentation to Improve Undergraduate Students' Ability to Read Research Articles. *CBE – Life Sciences Education*, 13, 253–264.
- Toulmin, S. E. (1957/2003). *The uses of argument*. Cambridge university press

Quality in Teaching Economics in Social Studies: Classroom observations in 9th grade

Michael Walkert, Karlstad University, Sweden

Teaching quality is a concept that has received increased attention in recent times, but there are few studies of what takes place in classrooms (Tengberg, 2022). This also applies to social studies didactic research, although in recent years there has been an increase in more classroom-oriented studies. However, there are few studies that examine the quality of teaching in economics, which is a central knowledge area in the social studies subject (Sandahl et al., 2022).

This paper presentation is about my upcoming PhD project, which is based on observations of teaching about economics in social studies during 40 lessons in 10 Swedish classrooms in grade 9. To analyze the teaching I will use the Protocol of language arts teaching observation (PLATO) which was developed in English as mother tongue (Grossman, 2013) but which is also used in other subjects (Klette et al., 2017). The paper discusses the method and some preliminary results from the analysis.

The study's design is based on systematic classroom observations that proceed from pre-given observation areas and criteria for coding which then lay the foundation for descriptive statistics to identify patterns in teaching.

The results of the preliminary analysis indicate that there are significant differences in the quality of teaching observed in the classrooms. This means that students in different classrooms systematically receive different types of teaching about economics and thus different opportunities to learn economics as an essential part of the subject social studies and understanding and living in a complex and changing society.

Keywords: Teaching quality, Social science, Observation protocol

References

- Bergström G., & Ekström, L. (2015). Mellan ämne och didaktik: Om ämnesteorins roll inom samhällskunskapsdidaktiken. *Nordidactica: Journal of humanities and social science education*, 1, 93–119.
- Grossman, P., Loeb, S., Cohen, J., & Wyckoff, J. (2013). Measure for measure: The relationship between measures of instructional practice in middle school English language arts and teachers' value-added scores. *American Journal of Education*, 119(3), 445–470.
- Klette, K., Blikstad-Balas, M., & Roe, A. (2017). Linking Instruction and Student Achievement – research design for a new generation of classroom studies. *Acta didactica*, 11(3), article 10.
<https://doi.org/10.5617/adno.4729>
- Tengberg, M. (Ed.). (2022). *Undervisningskvalitet i svenska klassrum*. Studentlitteratur
- Sandahl, J., Tväråna, M., & Jakobsson, M. (2022). Samhällskunskap (social science education) in Sweden: A country report. *Journal of Social Science Education*, 21(3).

The value of imagination in teacher-researcher collaboration when working with a didactic model in primary science

Maria Weiland, Stockholm University, Sweden

Teachers make many didactic considerations and choices when teaching. To distinguish, manage and reflect on a complex content, teachers need different types of tools. For this purpose, several different types of models and schemes have been created (cf. Sjöström et al., 2020). Didactic models can be used to plan, analyze, sort and structure teaching in a systematic way and they can also be useful for arguing and reasoning about various didactic choices. Didactic models are designed through so-called didactic modelling, which is carried out in interaction between theory and practice. The production of a didactic model has three integrated phases - extraction, mangling and exemplifying (Wickman et al., 2020).

The aim of the study is to further develop the tentative didactic model “didactic score” (Weiland, 2019) in a collaboration with primary teachers. Thus, the study focuses on the second and third phases of the modelling process, mangling and exemplifying, in order to make the model functional as a didactic tool for teachers in early grades.

The theoretical framework in the study is mainly grounded in Dewey’s pragmatic philosophy where e.g., Dewey's principle of continuity and imagination are central (cf. Dewey, 1938/1997; Dewey, 2005). Five teachers from two schools participate in the project, and the empirical material consists of audio and video recordings from conversations with teachers (grades 1–6) and from lessons in two classes (grade 3).

Two preliminary findings will be discussed in more detail, both concerning imagination which seems to be important in the modelling process. First, imagination and to draw and sketch was invoked as a way for the teachers to become familiar with a didactic model – to move from the particular to the abstract. Second, imagination seems to play a significant role for supporting teachers in identifying and exemplifying several teaching examples.

Keywords: Science education, Didactic modelling, Primary school, Imagination

References

- Dewey, J. (1938/1997). *Experience and education*. Simon & Schuster.
- Dewey, J. (2005). *Art as experience*. Penguin books.
- Sjöström, J., Eilks, I., & Talanquer, V. (2020). Didaktik Models in Chemistry Education. *Journal of Chemical Education*. doi:10.1021/acs.jchemed.9b01034
- Weiland, M. (2019). *Hänsyn till helheten: extrahering av en didaktisk modell för det komplexa innehållet i den naturorienterande undervisningen på lågstadiet* [Licentiate thesis, Uppsala University].
- Wickman, P.-O., Hamza, K., & Lundegård, I. (2020). Didactics and didactic models in science education. In P. White, R. Tytler, J. C. Clark, & J. Ferguson (Eds.), *Methodological approaches to STEM education research, 2019*. Cambridge Scholars Publishing.

Primary school student teachers as solvers of environmental problems

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Isabel Banos-Gonzalez, University of Murcia, Spain

Eila Jeronen, University of Oulu, Finland

Human activity has been shown to accelerate the change of natural environments. This study ended to examine the environmental problems in connection to human activity and societies in the discourses of primary school student teachers (PSTs). Environmental phenomena are part of the phenomena-based sustainability education in schools. This survey is included in the Finnish-Spanish research project regarding the competencies of PSTs.

The aim of the study was to investigate what kind of discourses PSTs present about the local, regional and global environmental problems and about their solutions to address the above-mentioned environmental problems. The respondents were PSTs (n=190) from seven Finnish universities. The material was collected using a questionnaire. The data consisted of the answers to four open questions (n=583). The answers were analyzed by a data-oriented discourse analysis and theory-driven by means that the influence of previous knowledge was noticeable in the analysis and the previous knowledge was to expand thinking. The following discourses existed in the answers: discourses of uncertainty and hope, discourses of everyday small actions, environmental citizenship discourses, individualization discourses, individual freedom discourses, joint regulation discourses and environmental relationship discourses. In addition, the action competency was analyzed regarding the discourses of everyday small choices and environmental citizenship.

The findings of these analyses revealed that the PSTs constructed their competence as environmental problem solvers through individual freedom and individual responsibility. Another finding indicated that PSTs' perceptions of environmental action competency suitable for pupils in the age of primary school was partly narrow which result is in line with the earlier findings of other researchers. This study was made to support the development regarding the role of the school and its possibilities to act as a force for change in solving global environmental problems.

Keywords: Discourse analysis, Student teacher, Sustainability

References

- Aarnio-Linnanvuori, E. (2018). *Ympäristö ylittää oppiainerajat: arvolatautuneisuus ja monialaisuus koulun ympäristöopetuksen haasteina*. Helsingin yliopisto.
- Bronfenbrenner, U. (1994/2008). Ecological Models of Human Development. In *International Encyclopedia of Education*, 3(2). Elsevier.
- Sarajärvi, A., & Tuomi, J. (2017). *Laadullinen tutkimus ja sisällönanalyysi*. Tammi.
- Yli-Panula, E., Jeronen, E., Vesterkvist, S., & Tolonen, P. (2021). Finnish Subject Student Teachers' Views on Their Social Competencies at the End of Their Educational Studies. *Transitioning to Quality Education*. MDPI. [doi:10.3390/books978-3-03897-893-0-4](https://doi.org/10.3390/books978-3-03897-893-0-4)

Problematic discourses of the human-nature relationship in worldview education: A discourse analysis of textbooks in Finland

Harriet Zilliacus, Lili-Ann Wolff, Pia Mikander & Arto Kallioniemi, University of Helsinki, Finland

The sustainability and climate crises create urgent need of research on how to enhance sustainability in worldview education. Human-centeredness of Western and Christian worldviews have had and still have a key role in bringing about the sustainability crises, which creates a need for critical educational research on teaching materials and human-nature relationship discourses within them (Martin, 2015; Mayer, 2019). Despite this problematic starting point, worldview education can potentially have a significant role in individual and societal change towards sustainability and, therefore, it needs to be developed (Stevenson et al., 2013). This study focuses on how Finnish worldview education introduces the human-nature relationship through textbook discourses in the initial school years. We have examined Lutheran and Orthodox textbooks in relation to sustainability education research discourses through a discourse analysis based on Laclau and Mouffe (1985/2001).

The preliminary results show that dualistic and hierarchical discourses of humans as Masters and Stewards dominate in textbooks, whereas Partner or Participant discourses are almost non-existent. This absence of discourses of interconnectedness and of humans as existentially dependent of other parts of nature creates obvious difficulties for educators. It makes it challenging to implement sustainability education in the classroom. A re-imagination of the human-nature relationship in worldview education appears necessary and has to engage many actors. It requires theological re-visioning, but also textbook development that engages students as active visionaries of the human-nature relationship from more pluralistic perspectives. Possible ways of developing future textbooks includes integrating new narratives, stories and examples of earth keeping and caring derived from Christianity, as well as perspectives from other traditional and currently developing worldviews. This could provide students opportunities to reflect on and imagine new ways of understanding and belonging to the world.

Keywords: Human-nature relationship, Worldview education, Textbooks

References

- Martin, M. K. (2015). The cry of earth and conflict with human cultures: A reflection for Christian religious educators. *Journal of Religious Education*, 63(1), 25–36.
- Mayer, F. S. (2019). *Transforming Psychological Worldviews to Confront Climate Change: A Clearer Vision, a Different Path*. University of California Press.
- Laclau, E., & Mouffe, C. (1985/2001). *Hegemony and socialist strategy. Towards a Radical Democratic Politics*. Verso.
- Stevenson, R. B., Brody, M., Dillon, J., & Wals, A. E. J. (2013). Introduction. In R. B. Stevenson, M. Brody, J. Dillon, & A. E. J. Wals (Eds.), *International handbook of research on environmental education* (pp. 1–7). Routledge.

Staying with the trouble: Students engaging with existential matters in literary education

Katrina Åkerholm & Heidi Höglund, Åbo Akademi University, Finland

In this presentation, we discuss a study in which upper secondary students engage with the picturebook *Furan* by Lisen Adbåge (2021). This August Prize nominated work is described as a bold story that comments on the climate crisis and on social climate. The point of departure for the study is the research interest in undecidability and unpredictability in literary education. For example, researchers in the Nordic countries have recently advocated for upholding undecidabilities (Johansen, 2019) and emphasised the impossibility of literature teaching that seeks to predetermine students' encounters with literature (Harstad, 2020).

The study was planned and executed as an intra-vention study (Taylor, 2018) in cooperation with teachers. In the analysis, we use a thinking with theory approach (Jackson & Mazzei, 2022), which refers to putting theories to work in empirical data. Drawing on video recordings of the students' engagement with the picturebook, the aim of the study is to *think with* Donna Haraway's (2016) *staying with the trouble* and explore what it can bring to literary education. Staying with the trouble is a philosophical approach to the world, a way of becoming response-able in troubled times. As a way to stay with the trouble, Haraway suggests string figures as a theoretical trope: "Playing games of string figures is about giving and receiving patterns, dropping threads and failing but sometimes finding something that works, something consequential and maybe even beautiful, that wasn't there before..." (Haraway, 2016, p. 10). Haraway suggests that whether we like it or not, we have a pattern in our hands that we need to make something of.

Preliminary findings point to the importance of cultivating response-ability in literary education, encouraging us to further explore instances in which the students engage with existential matters. Thus, thinking with Haraway brings forward the question of *Bildung* in literary education.

Keywords: Literary education, Upper secondary school, Post-qualitative inquiry

References

- Haraway, D. J. (2016). *Staying with the trouble: Making kin in the Chthulucene*. Duke University Press.
<https://doi.org/10.1515/9780822373780>
- Harstad, O. (2020). Å bli til med litteraturen. En metafysisk og nevrovitenskapelig forståelse av skjønnlitteraturens virkning [Becoming with literature. A metaphysical and neuroscientific understanding of the impact of literature]. *Nordisk tidsskrift for pedagogikk og kritikk*, 6, 174–187.
<https://doi.org/10.23865/ntpk.v6.2046>
- Jackson, A. Y., & Mazzei, L. A. (2022). *Thinking with theory in qualitative research: Viewing data across multiple perspectives* (2nd ed). Routledge.
- Johansen, M. B. (2019). *Litteratur og dannelse: At lade sig berige af noget andet end sig selv* [Literature and Bildung: Allowing oneself to be enriched by something other than oneself]. Akademisk Forlag.
- Taylor, C. A. (2018). Edu-crafting posthumanist adventures in/for higher education: A speculative musing. *Parallax*, 24(3), 371–381. <https://doi.org/10.1080/13534645.2018.1496585>

Symposium abstracts

in chronological order

Symposium 1H: Cross-curricular teaching – a Finnish perspective

Chair: **Tom Gullberg**, Åbo Akademi University, Finland

The purpose of the symposium is to examine how subject teachers in lower and upper secondary schools in Finland work with cross-curricular teaching. Cross-curricular or interdisciplinary pedagogy has been given a stronger role in the new curricula in Finland. At the symposium, the results of an analysis of how cross-curricular teaching is expressed in the curricula of several Swedish-speaking upper secondary schools are presented (Tom Gullberg), and results from case studies on cross-curricular teaching in some lower secondary schools are presented (Ann-Sofi Røj-Lindberg). In addition, practicing subject teachers will present ongoing projects in two schools: Björneborg Svenska Samskola about their project *Religion meets geography in language-aware democracy education: reporting ongoing action research in grades 7–9* and Gymnasiet i Petalax about their *Interdisciplinary Study Programme at Upper Secondary Level*.

Paper 1. Cross-Curricular teaching in the curricula of Swedish-speaking upper secondary schools in Finland

Tom Gullberg, Åbo Akademi University, Finland

In the new upper secondary school curriculum from 2019, different forms of cross-curricular teaching are very clearly emphasized. On the one hand, the curriculum has established six different miscellaneous competences that must be considered in the teaching of all subjects, and, on the other hand, the previous subject course structure has been reformatted into modules that can be combined between different subjects, so that it is possible to collaborate on cross-curricular study sections within the framework of subject teaching.

In my presentation, the results of an analysis of all Swedish-language upper secondary schools' curricula are presented, with a focus on how the various schools plan to implement interdisciplinary teaching. The analysis also examines how different subjects intend to consider the six different miscellaneous competences in teaching. Here it is interesting to note whether it is possible to discern clear trends within the same subjects in different upper secondary schools. The focus of the analysis is on the different subject modules, and how different school subjects are combined into different cross-curricular study sections. Is there a tendency regarding what form of interdisciplinary teaching is considered as important in the various upper secondary schools?

There are several practical as well as educational challenges with combining different subject modules into cross-curricular subject study sections. The study therefore also includes interviews with some principals and subject teachers, with the aim of being able to show how the upper secondary schools feel that the new curriculum can be implemented in practice.

Keywords: Cross-curricular teaching, Curriculum, Upper secondary school, Competences

References

- Gullberg, T. (2022). Ämnesövergripande undervisning och projekt i det nya gymnasiet – hur var det tänkt och vad kan det bli? I N. Mård (Ed.), *Ämnesövergripande undervisning och demokratifostran. Idemo-hankkeen tuloksia 2018–2022*. Åbo Akademi.
- Haapaniemi, J., Venäläinen, S., Malin, A., & Palojoki, P. (2020). Teacher autonomy and collaboration as part of integrative teaching – Reflections on the curriculum approach in Finland. *Journal of Curriculum Studies*. <https://doi.org/10.1080/00220272.2020.1759145>
- Niemelä, M. A., & Tirri, K. (2018). Teachers' Knowledge of Curriculum Integration: A Current Challenge for Finnish Subject Teachers. *Contemporary Pedagogies in Teacher Education and Development*. I Y. Weinberger (Ed.), *Contemporary Pedagogies in Teacher Education and Development* (pp. 119–132). IntechOpen. Available online: <https://helda.helsinki.fi/bitstream/handle/10138/239248/60297.pdf?sequence=1&isAllowed=y>
- Stolare, M. (2019). Ämnen i samspel, interdisciplinartitet och powerful knowledge. I L. Krogager Andersen, P. Hobel, & S.-E. Holgersen (Eds.), *Tværfaglighed og fagligt samspil* (pp. 163–177). Aarhus universitetsforlag

Paper 2. Sustainable Development - An interdisciplinary study programme at upper secondary school Gymnasiet i Petalax

Regina Öhman, Anton Lindholm & Slava Myronov, Gymnasiet i Petalax, Finland

Gymnasiet i Petalax is the first upper secondary school in Finland to offer an interdisciplinary study programme. As a part of that programme, the study unit Sustainable Development was held from August to the end of October in 2022. The study unit was the result of the collaborative work of three teachers representing different scientific fields: Regina Öhman (mathematics and physics), Anton Lindholm (physics and chemistry) and Slava Myronov (history and social studies).

Sustainable development is a complex and multifaceted subject that is best understood with an interdisciplinary approach. Thus, the course was divided into three sections: ecological, social and economic sustainable development. The teachers jointly carried out the lessons with the objective of creating a fluid and seamless transition between the different fields of knowledge. The students did a set of group projects in which they had the opportunity to study sustainable development from different angles. Besides regular work in class, students went on a study visit to an eco-farm to learn about sustainable development from a business perspective. In addition, they had the opportunity to listen to two guest lecturers. One lecture was about women's rights and sustainability, and the other was about how a municipality works in order to implement sustainable development goals.

The response from both teachers and students was largely positive. The essential benefits of the interdisciplinary work method were the possibility to incorporate topics that usually are outside the curriculum and the synergy between the different study fields. In the teachers' opinion, the amount of initial preparational work was the main challenge.

Paper 3. Finland Swedish teachers' insights from a development project focused on cross-curricular teaching

Ann-Sofi Røj-Lindberg, Åbo Akademi University, Finland

The results that will be presented are based on a case study (Røj-Lindberg et al., 2022) where the focus was on emerging insights of a community of Finnish-Swedish teachers collaborating on subject integration within the frame of a development project. The community consisted of a group of didacticians from the Faculty of Education and Welfare Studies (FPV) at Åbo Akademi University and groups of practitioners (subject teachers) in three lower secondary schools. The development project was financed by LUMA-Finland (www.luma.fi) and lasted for three years (2015–2017). During this period the didacticians and the practitioners came together regularly for workshops on the university campus or at either of the three schools. Collaborative meetings were also held separately in the subgroups. During the workshops and collaborative meetings cross-curricular teaching was problematized and planned for.

The analyzed empirical material consists of text documents, audio and video recordings from workshops and collaborative meetings. Two important insights that emerged from a synchronic analysis during the project and a diachronic thematic analysis after the project had ended, was 1) reflexivity as a necessary but not sufficient grounding for the participating teachers (Probst, 2015) and 2) the importance of material (concrete) and immaterial (abstract) resources for learning in and through cross-curricular teaching. In the presentation I will highlight conducive conditions to consider when implementing cross-curricular teaching.

Keywords: Case study, Teacher collaboration, Cross-curricular teaching

References

- Basse, M. (1999). *Case study research in educational settings*. Open University Press.
- Probst, B. (2015). The eye regards itself: benefits and challenges of reflexivity in qualitative social work research. *Social Work Research*, 39(1), 37–47.
- Røj-Lindberg, A.-S., Hartvik, J., & Ingves, M. (2022). En fallstudie om finlandssvenska lärares insikter från ett utvecklingsprojekt. *Nordic Studies in Education*, 42(2), 176–193

Paper 4. Religion meets geography in language-aware democracy education: reporting ongoing action research in grades 7–9

Erika Ekholm & Nina Juganson, Björneborgs svenska samskola, Finland
Liselott Forsman & Mårten Björkgren, Åbo Akademi University, Finland
Arto Kallioniemi, Helsinki University, Finland

As social conditions change and questions arise about what knowledge to prioritize, education for democracy has become front and centre. In line with John Dewey, each generation must give birth to democracy anew. In this effort to create tomorrow's active citizens, it is of utmost importance to have a holistic view of human activity.

As many students perceive religion as a school subject to be of little importance, it becomes challenging for educators to motivate them. However, we believe religious education is crucial for gaining increased understanding of the foundations of today's societies and their increasing complexity, e.g. how current laws are based on religious traditions. As religion and geography share content areas connected to democracy education e.g. cultural tradition and human rights, we suggest that synergies can be created through cross-curricular co-operation.

We aim at developing holistic cross-curricular language-aware teaching throughout grades 7-9 where religion and geography co-operate around democracy education. The emphasis will be on cultural tradition, human rights and sustainable development as well as supportive literacy strategies.

To reach our aim, we will build our teaching on Vygotsky's theories that active students learn from each other and with each other in dialogue and with support on their developmental level. As students take ownership of their learning by doing, they increase their well-being, which, in turn, contributes to meaningfulness in line with Antonovsky's KASAM theory.

Our research project is based on action research principles over a period of at least three years. Data will mainly be gathered through regular surveys and in-depth interviews with students to evaluate and re-direct our efforts. We expect the co-operation to contribute to a more holistic understanding of how cultural traditions have their basis in geographical areas and religious beliefs, thereby also contributing to making religious education more meaningful from a student perspective.

Keywords: Cross-curricular education, Democracy education, Learning by doing

References

- Antonovsky, A. (1991). *Hälsans mysterium*. Natur & kultur.
Dewey, J. (1997). *Demokrati och utbildning*. Daidalos.
Lindqvist, G. (1999). *Vygotskij och skolan*. Studentlitteratur.

Symposium 1I: Sustainable World Heritage Learning through a Phenomenon-based Approach

Chair: **Lili-Ann Wolff**, University of Helsinki, Finland

Sustainable World Heritage Learning through a Phenomenon-based Approach (SveaSus) is a teaching and learning experiment that has been running in the Suomenlinna World Heritage site since 2017. The project team includes lecturers, researchers and students at the Faculty of Educational Sciences at the University of Helsinki, who collaborate with World Heritage experts, artists, schools, other organizations, and partner researchers. The aim of the project is to strengthen students', teachers', teacher educators', and others' understanding of sustainability issues and encourage joint actions towards a more sustainable future. The project strives to promote both transdisciplinary and transformative learning processes, and the role of language and multilingual expressions are important. The development and research are interrelated and the research includes theoretical and empirical studies that are performed through a diversity of methods. This symposium presents examples on both ongoing research and results from finished studies.

Paper 1. Phenomenon-based learning from a theoretical view

Lili-Ann Wolff & Birgit Schaffar, University of Helsinki, Finland

In 2014, the idea of phenomenon-based learning (PhBL) was introduced in the Finnish core curriculum for basic education. As an indistinct concept with many roots, PhBL is under-theorized and under-researched, and its unclear principles are variously interpreted and implemented. It is neither a theory nor a method, but sooner an approach. PhBL relates to a pedagogical way of viewing learners, teachers, and knowledge both distinctly and in their context. Theoretically, the concept is based on constructivism, pragmatism, and phenomenology. In Finland, PhBL has methodically been introduced in connection with problem-based learning (PBL) and inquiry-based learning (IBL), in other countries also in relation to phenomenological learning and hermeneutic learning. PhBL is interdisciplinary, student-centered, collaborative, and relates to authentic problems. In psychological perspectives, learning is linked to the students' interests and emotions, while philosophical perspectives emphasize comprehensive learning situations and seeks answers on ethical and existential questions. PhBL takes place in early childhood settings, schools, and in higher education, and has been proposed as a way to meet the educational challenges of sustainability. Thus, PBL is future oriented, and at its best even transformative.

To provide a deeper understanding of PhBL, this paper discusses how PhBL appeared in a Finnish educational context, and how it could be interpret, understood, and further developed (Schaffar & Wolff, forthcoming). Despite that PhBL in Finland is mostly linked to traditions of educational psychology, especially constructivism, philosophical approaches like phenomenology, existentialism and the tradition of Bildung have made strong impacts on pedagogy and educational development in Finland. This paper is based on a theoretical study, and mainly discusses PhBL from philosophical and educational views. Drawing on a complexity of philosophical, societal, scientific and economic developments, we argue that

the idea of PhBL is neither new, nor is it surprising that it has appeared in the Finnish context. However, PhBL provides several attributes that are worth striving for to meet the contemporary world challenges.

Keywords: Phenomenon-based learning, Phenomenology, Bildung

References

- Küpers, W. (2012). Phenomenology of learning. In N. B. Seel (Ed.), *Encyclopedia of the sciences of learning* (pp. 2611–2615). Springer.
- Merleau-Ponty, M. (2012). *Phenomenology of perception*. Routledge.
- Schaffar, B. (2021). Bildning som etisk fråga och dialog. In J. Ahlskog (Ed.), *Människans allsidiga utveckling: Essäer om bildningens betydelser i tjugoförsta århundradet* (pp. 94–107). Svenska folkskolans vänner.
- Schaffar, B. & Wolff, L.-A. (forthcoming). Phenomenon-based learning in Finland: A historical and philosophical overview.
- Wolff, L.-A. (2022). Phenomenon-based learning. In S. Idowu, R. Schmidpeter, N. Capaldi, L. Zu, M. del Baldo, & R. Abreu (Eds.), *Encyclopedia of sustainability management*. Springer Nature.

Paper 2. The role of emotions on sustainability matters in teacher education

Emma Heikkilä, University of Helsinki, Finland

In the transition towards a sustainability-oriented society, the dimension of emotions needs to be considered when dealing with sustainability issues in education. Sustainability is value-laden and relates to emotions. In my doctoral thesis, I study the role of emotions in relation to sustainability in teacher education and within the research project SveaSus. The focus is on students' and teacher educators' experiences, and the role of emotions when dealing with sustainability related issues. Since the 1980s, sustainability has been divided in three dimensions, ecological, social and economic. Of these, I will especially focus on the social dimension. The first sub-study draws from student experiences on safe spaces and emotions when working with a group project about digital storytelling during a course arranged within the framework of SveaSus.

Many scholars have studied emotions in education. In this thesis, I will mainly apply Sara Ahmed's theories on emotions. In her discussion on social justice, Ahmed uses a phenomenological approach to emotions as intentional, as being attentive on objects, towards something. Following Ahmed, I will study what directions emotions take in learning processes from a phenomenological viewpoint. Being object-oriented, emotions both shape and are shaped by social sustainability related issues and related topics (the object of study). I will also explore emotions from diverse perspectives: the concept of 'safe spaces', the Transformative Learning Theory, and in relation to teaching practices at universities. The thesis applies qualitative methods and draws on a hermeneutic phenomenological approach.

With the thesis, I aim to offer a better understanding of the role of emotions when dealing with social sustainability issues in teacher education. To meet this end, I will discuss and analyse what emotions emerge in learning situations, what their role are, and what implications that arise in teaching practice.

Keywords: Emotions, Sustainability education, Social sustainability

References

- Ahmed, S. (2014). *The cultural politics of emotion* (2nd ed.). Edinburgh University Press.
- Magis, K., Shinn, C. (2008). Emergent Principles of Social Sustainability. In J. F. Dillard, V. Dujon, & M. C. King (2009), *Understanding the Social Dimension of Sustainability*. Routledge.
- Mezirow, J. (1991). *Transformative dimensions of adult learning*. Jossey-Bass.
- van Manen, M. (1990). *Researching lived experience: Human science for an action sensitive pedagogy*. State University of New York Press.
- Waugh, C. (2019). In Defence of Safe Spaces: Subaltern Counterpublics and Vulnerable Politics in the Neoliberal University. In M. Breeze, Y. Taylor, & C. Costa (Eds.), *Time and space in the neoliberal university: Futures and fractures in higher education* (pp. 143–168). Springer International Publishing. https://doi.org/10.1007/978-3-030-15246-8_7

Paper 3. Epistemic matters in collaborative video storytelling for social sustainability

Marianna Vivitsou, University of Helsinki, Finland

This paper aims to discuss epistemic issues that emerged in students' group work for telling stories with video technologies. The group work took place as part of a university course with a focus on sustainability education within the framework of the SveaSus project. During the work in groups, the students used audio-visual methods to tell their stories on social sustainability-related topics.

The initial analysis of the students' work and interviews reveals the complexity of the task to conceptualize, film, edit and share video stories and brings forward conflicting metaphors of learning: as linear and straightforward, and as multidimensional process that requires multiple stages and configurations. In addition, ethical concerns arise about how experiences, knowledge, bodies and technologies are used to convey social sustainability-related meanings. And what are best platforms for sharing the stories; what can be shared; and what cannot.

These issues concern both the knowledge produced and the nature of collaboration during the video (digital) storytelling process. This also indicates that collaboration is a multi-layered process and, more of a struggle, than a self-fulfilling prophecy. In addition, collaborative work is tied to the emotions shared by the students in the different configurations of the course (i.e., on campus, on-site, online, hybrid etc.) and directed toward the different layers of work, including the students' work in groups and the video storytelling. The students' emotions were able to move the narrative of the class and the course forward. They were also able to hold it back.

These findings have implications for both teaching and doing research in sustainability education with audio-visual methods. As the student work in groups is multi-layered, it takes place in the boundaries at different levels. This points to the need to revisit the epistemological and methodological approaches underlying teaching and learning sustainability education.

Keywords: Video storytelling, Students' collaborative work, Social sustainability

References

Ahmed, S. (2014). *The cultural politics of emotion* (2nd ed.). Edinburgh University Press.

Byskov, M. F. (2020). What makes epistemic injustice an "injustice"? *Journal of Social Philosophy*, 52(1).

Petersen, E. B. (2013). Cutting edge(s): An ethno- graphic drama in three acts. *Cultural Studies Critical Methodologies*, 13(4), 293–298. <https://doi.org/10.1177/1532708613487876>

Vivitsou, M. (2016). *Social media and networks as communicative acts: Vulnerabilities and possibilities for the pedagogies of the future – An empirical hermeneutical study of Finnish and Greek teachers' and students' experiences* [Doctoral dissertation, University of Helsinki].

Symposium 2I: Post-approaches to education and teacher education

Chairs: **Charlotta Hilli & Sofia Jusslin**, Åbo Akademi University, Finland

Discussant: **Antti Paakkari**, Tampere University, Finland

This symposium discusses various topics within educational research inspired by post-approaches. As an umbrella term, post-approaches relate to ontological turns, questioning ontological and epistemological assumptions of a human-centred worldview and thus, radically shaking how knowledge, learning, and teaching are understood. As knowledge-creation includes relational, material, and affective matters and doings and happens in relations between humans and nonhumans (Taylor, 2016), post-approaches shake who matters and what counts as knowledge in education and teacher education. As such, this symposium concerns rethinking education and teacher education as doings and becomings with/in a more-than-human world.

The symposium includes four presentations (15 minutes), ending with provocations to invite the audience to consider otherness and different ways of doing/becoming/knowing during an academic conference. After the presentations, a discussant will think with the presentations and topics (25 minutes).

Reference

Taylor, C. (2016). Edu-crafting a Cacophonous Ecology: Posthumanist Research Practices for Education. In C. A. Taylor & C. Hughes (Eds.), *Posthuman Research Practices in Education* (pp. 5–24). Palgrave Macmillan.

Paper 1. Early language learning through dance-based activities: How sounds and movement matter for children's languaging

Kaisa Korpinen, University of Turku, Finland

Embodied learning approaches can support children's language learning holistically, and artsbased activities in particular can foster positive attitudes towards learning language (Jusslin et al., 2022). However, more research is needed on how different art forms, including dance, can engage children in language learning as embodied processes.

This paper is based on a project that combined dance with Swedish language learning in a Finnish primary school (2019–2021). The focus is on the animal-themed activities that were held in the spring of 2021. The aim is to explore how dance-based activities on animals as nonhuman, non-gendered characters engaged the second grades in embodied language learning.

By drawing on a socio-material take on language as languaging, i.e., doings in human-nonhuman relations (Toohey, 2019), the study asks 1) how dance-based activities engaged the children in languaging and 2) what mattered for the children in languaging. The data encompass video recordings of the pedagogical activities, pupil interviews, and the researcher's reflections and lived experiences. The analysis uses

comics as an arts-based research strategy (Kuttner et al., 2021) to zoom in on the relations between languages, bodies, things, and places in the languaging events, and to shift the focus from what matters to adults to what matters to the children in the events.

Preliminary observations suggest that collectively experimenting with embodied actions and subjectivities through becoming animals engaged the children in languaging. Moreover, it was not merely the words, but the words in relation to moving, rhyming, clapping, and vocalizing that seemed to matter for the children in languaging. These insights expand what is usually seen to matter for language learning in instructional contexts. The paper discusses the implications for early language education. To end, the presentation invites the participants to seek out encounters and jointly explore language, sounds, and movements in becoming animals.

Keywords: Post-approaches, Early language education, Dance

References

- Jusslin, S., Korpinen, K., Lilja, N., Martin, R., Lehtinen-Schnabel, J., & Anttila, E. (2022). Embodied learning and teaching approaches in language education: A mixed studies review. *Educational Research Review*, 37, 100480. <https://doi.org/10.1016/j.edurev.2022.100480>
- Kuttner, P. J., Weaver-Hightower, M. B., & Sousanis, N. (2021). Comics-based research: The affordances of comics for research across disciplines. *Qualitative Research*, 21(2), 195–214. <https://doi.org/10.1177/1468794120918845>
- Toohy, K. (2019). The Onto-Epistemologies of New Materialism: Implications for Applied Linguistics Pedagogies and Research. *Applied Linguistics*, 40(6), 937–956. <https://doi.org/10.1093/applin/amy046>

Paper 2. Aesthetic Capture: Moving and sounding assemblages of wind, soap bubbles, children, a research camera and a forest

Jenny Renlund & Jenny Byman, University of Helsinki, Finland

Authors: Jenny Renlund, Kristiina Kumpulainen, Chin Chin Wong, Jenny Byman & Sara Sintonen

This study considers the aesthetic power of matter to captivate children within pedagogical practices in early childhood education, by combining phenomenological (e.g., Levin, 2016) and posthumanist approaches (e.g., Hoogland, 2014) that understand aesthetics as relationally, sensuously, and materially grounded. Drawing on data from a storying workshop with 6–8 year old children in a Finnish primary school, we explore mesmerizing moments that emerged in assemblages of wind, soap bubbles, children, a research camera, and a forest. Through a post-qualitative methodology (e.g., Lorimer, 2013; Rousell et al., 2020) and sensory ethnography (Pink, 2015), we take a multimodal and experimental approach to the video recordings from the workshops. We have engaged with the more-than-human sounds and movements in the recordings during several performative readings, by slowing them down, speeding them up, transcribing them into text and exploring them through digital painting. This process manifests

into visual-textual montages that draw attention to the aesthetic dynamics of children and more-than-human matter, allowing us to scramble our sensory engagement with the data and to notice

The findings show how intense moments created collective pulls; aesthetic captures that sensuously possessed and enthralled the assembled agencies into reciprocal sounding and moving. Within these aesthetic captures a soap bubble together with some wind and trees was able to move human bodies and elicit strong responses. Our study contributes new understandings of aesthetics in early childhood education as a collective and communicative force that materializes in both embodied and conceptual ways within more-than-human pedagogical assemblages.

During the presentation we invite the audience to move with the visual-textual unfolding of the montages and to imagine where they can continue to move. How does the step, the beat, the crack, the cry further morph as aesthetic matter?

Keywords: Aesthetic capture, Early childhood education, More-than-human

References

- Hoogland, R. (2014). *A Violent Embrace: Art and Aesthetics after Representation*. University Press of New England.
- Levin, K. (2016). Aesthetic movements of embodied minds: Between Merleau-Ponty and Deleuze. *Continental Philosophy Review*, 49(2), 181–202. <https://doi.org/10.1007/s11007-016-9376-2>
- Lorimer, J. (2013). More-Than-Human Visual Analysis: Witnessing and Evoking Affect in Human-Nonhuman Interactions. In R. Coleman & J. Ringrose (Eds.), *Deleuze and Research Methodologies* (pp. 61–78). Edinburgh University Press. <https://doi.org/10.1515/9780748644124-005>
- Pink, S. (2015). *Doing Sensory Ethnography* (2nd ed). SAGE.
- Rousell, D., Lasczik Cutcher, A., Cook, P. J., & Irwin, R. L. (2020). Propositions for an Environmental Arts Pedagogy: A/r/tographic Experimentations with Movement and Materiality. In A. Cutter-Mackenzie-Knowles, K. Malone, & E. Barratt Hacking (Eds.), *Research Handbook on Childhoodnature* (pp. 1815–1843). Springer. https://doi.org/10.1007/978-3-319-67286-1_95

Paper 3. A Rhizomatic Re-thinking of the Collaborative Writing Process: Thinking Brainstorming as Otherwise

Mindy Svenlin & Sofia Jusslin, Åbo Akademi University, Finland

This presentation is an invitation to re-think collaborative writing processes. Writing pedagogy has traditionally built upon product and/or process writing theory. Process writing, in both individual and collaborative writing roughly comprises the stages brainstorming, outlining, drafting, revising, and publishing, but the brainstorming stage has not received much attention in previous research (Svenlin & Sørhaug, 2022). Thus, we wanted to especially focus on brainstorming in the collaborative writing process. With data from upper secondary school students' collaborative writing of a school musical manuscript, the aim is to think brainstorming as otherwise.

In this study, we think with Deleuze and Guattari (1987/2013) and are influenced by an ontological turn (Jusslin et al., 2022) that moves beyond a representational, linear, and human-centered thinking in education and literacies. Instead, focus shifts towards human and more-than-human relations. This consequently challenges the view of writing and encourages us to think writing and brainstorming differently and otherwise.

Previous research has called for new, pedagogical rhizomatic practices (Fullagar & Kuby, 2022). The rhizome originally refers to the root system of trees, but the Deleuzoguattarian (Deleuze & Guattari, 1987/2013) take on rhizome means disrupting a causal, linear, and conventional thinking and instead emphasizes the unexpected and surprising. We put the rhizomatic thinking to work in the produced data and perform a rhizoanalysis of upper secondary students' collaborative writing sessions.

The study problematizes our understanding of the writing process and moves beyond a traditional view of writing. Although most researchers agree that the writing process is iterative and cyclic rather than linear and chronological, a rhizomatic re-thinking of brainstorming encourages us further to consider the writing process as otherwise. We propose a re-thinking of writing as rhizomatic: as messy and as a relational becoming with human and more-thanhuman entities.

In the presentation, we invite the audience to think with the messiness and relation becomings that unfold with/in collaborative writing processes. How do brainstorming (un)fold when humans and more-than-humans write together and do we ever brainstorm alone?

Keywords: Collaborative writing, Brainstorming, Post-approaches

References

- Deleuze, G., & Guattari, F. (2013). *A Thousand Plateaus: Capitalism and Schizophrenia* [Original work published in 1987]. Bloomsbury Academic.
- Fullagar, S., & Kuby, C. (2021). Rhizome. In K. Murriss (Ed.), *A glossary for doing Postqualitative, new materialist and critical posthumanist research across research* (pp. 114–115). Routledge. <https://doi.org/10.4324/9781003041153>
- Leggette, H. R., Rutherford, T., Dunsford, D., & Costello, L. (2015). A review and evaluation of prominent theories of writing. *Journal of Applied Communications*, 100(1), 6–21. <https://doi.org/10.4148/1051-0834.1056>
- Jusslin, S., Bodén, L., Magnusson, L., & Østern, T. P. (2022). Post-approaches to education and the arts: Putting theories to work in arts educational practices. *Journal for Research in Arts and Sports Education*, 6(3), 1–10. <https://doi.org/10.23865/jased.v6.4017>
- Svenlin, M., & Sørhaug, J. O. (2022). Collaborative writing in L1 school context: A scoping review. *Scandinavian Journal of Educational Research*. [Advance Online Publication.] <https://doi.org/10.1080/00313831.2022.2115128>

Paper 4: Reading reflections diffractively – becoming teachers

Alexandra Nordström¹, Charlotta Hilli², Jenny Byman¹, Jenny Renlund¹, Sofia Jusslin², Heidi Höglund², Mindy Svenlin², Katrina Åkerholm²

¹ University of Helsinki, Finland ² Åbo Akademi University, Finland

In this study, we ask what might be made possible if teachers embrace affective ways of knowing and learning in pedagogical settings by thinking with the concept of ‘becoming’. Here, becoming is attended to as an ongoing process of moving, changing, and shifting in and of itself, eluding explanation and going beyond a static definition (Massumi, 1992; Rubin, 2022).

The empirical material consists of teacher students’ reflections generated during the university course *Children’s literature and drama*, as well as reflections and discussions amongst the authors of this paper. We approach the empirical material as practical provocations, that is, thought-provoking events, or diffractive engagements from practice (Murriss, 2021; Nordström, 2022). The practical provocations are presented as companions for thinking, seeing, and feeling with, as opposed to representational examples (Vintimilla et al., 2021).

Thinking with practical provocations of teacher students’ reflections gathered on an interactive digital whiteboard, as well as our (teacher educators and researchers) diffractive reading and collaborative writing opens up novel ways to think about relationality in literacies teaching and learning in educational settings. Diffractive reading takes the place of interpretivism and representationalism in treating the practical provocations as emergent, open, and dynamic rather than focussing on comparing, coding, contrasting, or categorising (see also Jackson & Mazzei, 2013; Murriss & Bozalek, 2019).

Further, we examine affective intensities in becoming teachers by using non-representational and postqualitative methodologies. The aim is to disrupt and rethink the ways in which we approach reflections and relationality in literacies education and teacher education.

Keywords: Becoming, Affective intensities, Postqualitative methodologies, Reflections, Teacher training

References

- Jackson, A., & Mazzei, L. (2013). Plugging one text into another: Thinking with theory in qualitative research. *Qualitative Inquiry*, 19(4), 261–271. <https://doi.org/10.1177/1077800412471510>
- Massumi, B. (1992). *A User's Guide To Capitalism and Schizophrenia: Deviations from Deleuze and Guattari*. MIT Press.
- Murriss, K., & Bozalek, V. (2019). Diffracting diffractive readings of texts as methodology: Some propositions. *Educational Philosophy and Theory*, 51(14), 1504–1517. <https://doi.org/10.1080/00131857.2019.1570843>
- Nordström, A. (2022). Reimagining joy as a performative force in early childhood education. *Contemporary Issues in Early Childhood*. <https://doi.org/10.1177/14639491221089332>
- Vintimilla, C. D., Pacini-Ketchabaw, V., & Land, N. (2021). Manifesting living knowledges: A pedagogists’ working manifesto. *Journal of Curriculum and Pedagogy*, 1–10. Epub ahead of print. <https://doi.org/10.1080/15505170.2021.1955051>

Symposium 2J: Movement integration – mixing theoretical and practical perspectives from elementary school to teacher education

Chair: **Joni Kuokkanen**, Åbo Akademi University, Finland

Discussants: **Jan-Erik Romar**, Åbo Akademi University & **Martin Ahlskog**, Sursik Comprehensive School, Finland

Movement integration (MI) is a research-supported strategy focusing on merging activities that are intentionally physical, at any level of intensity, into content-specific academic lessons to expedite learning outcomes and academic performance and reduce off-task behaviour in education (Moon et al., 2022; Webster et al., 2015). A wide range of MI interventions has been reported over the last decade, and the accumulation of data through recent systematic reviews and meta-analyses of classroom-based PA interventions has increased dramatically (Bedard et al., 2019; Vetter et al., 2020). Thus, this symposium gathers four researchers and practitioners from different education levels and contexts to introduce and discuss the newest trends within MI. The presentations will be summoned in a panel discussion lead by two invited discussants. In addition, the symposium will integrate knowledge and movement breaks, enabling the participants an opportunity to experience the curriculum.

References

- Bedard, C., St John, L., Bremer, E., Graham, J. D., & Cairney, J. (2019). A systematic review and meta-analysis on the effects of physically active classrooms on educational and enjoyment outcomes in school age children. *PloS one*, *14*(6), e0218633.
- Moon, J., Webster, C. A., Herring, J., & Egan, C. A. (2022). Relationships between systematically observed movement integration and classroom management in elementary schools. *Journal of Positive Behavior Interventions*, *24*(2), 122–132.
- Vetter, M., Orr, R., O'Dwyer, N., & O'Connor, H. (2020). Effectiveness of active learning that combines physical activity and math in schoolchildren: A systematic review. *Journal of School Health*, *90*(4), 306–318.
- Webster, C. A., Russ, L., Vazou, S., Goh, T. L., & Erwin, H. (2015). Integrating movement in academic classrooms: understanding, applying and advancing the knowledge base. *Obesity Reviews*, *16*(8), 691–701.

Paper 1. Movement Integration frameworks. Application in teacher training and in its application in schools.

David Gutiérrez-Díaz Del Campo, University of Castilla-La Mancha, Spain

This presentation introduces two frameworks that can serve for a better understanding of the benefits of MI, and how to progressively integrate it into teacher training and its application in schools. Thus, the presentation provides a sturdy theoretical foundation for the three following presentations.

The first framework addresses the objectives pursued by MI strategies; health improvement (i.e., prevention of postural problems, and improvements associated with increased physical activity); improvement of learning (i.e., reinforce learning of curricular contents, and develop cognitive processes; and improvement of socio-emotional factors (i.e., improve classroom climate/integration, and other mediators such as fun and anxiety). Considering that MI strategies can and should include several objectives, the prioritization of some over others will have implications for their design. In teacher education, establishing an interdisciplinary approach for teaching calls for an understanding of the specific objectives that can be reached through different MI strategies.

The second framework by Webster and colleagues (2019) includes a proposal and criteria for progression in MI strategies, labelled MI Wheelhouse. The framework consists of four progressive stages that take into account two aspects: a) the preparation requirements and need for knowledge of the teacher, and b) the integration of movement in the learning process of academic content. The first of these four stages include strategies such as physical activity breaks, which involves taking a break from academics to engage in physical activity without relating it to subject matter content. The second includes active lessons, that is, a combination of physical activity with academic instruction/learning. The third involves the use of movement to enhance understanding of subject concepts. Finally, the fourth describes those interdisciplinary proposals where the contents of academic subjects are merged with the concepts of Physical Education. Understanding this sequence is of great importance for professional development and expanding the use of MI strategies, but can also serve as a framework for research on this topic.

Keywords: Movement integration, Teacher training, Primary education

References

Moon, J., & Webster, C. A. (2019). MI (my) Wheelhouse: A Movement Integration Progression Framework for Elementary Classroom Teachers. *Journal of Physical Education, Recreation and Dance, 90*(7), 38–45. <https://doi.org/10.1080/07303084.2019.1644258>

Paper 2. MI as a daily practice in a second-grade classroom

Lia Gómez Domínguez, Åbo Akademi University, Finland

Engaging in adequate levels of PA is especially important in the early stages of life when the individual is developing and acquiring essential skills for life (D'elia et al., 2020). As MI is a worthwhile strategy to promote PA at school (Webster et al., 2020), the present research aims to put it into practice in a second-grade classroom setting, with the main purpose of achieving a sustainable way of implementing it as part of the school culture.

The aim of the study is to apply MI as a daily practice in the classroom and observe the students' behaviours and attitudes towards MI to find a sustainable routine of strategies for combining movement with academic learning in the classroom.

This study is ethnographical research in which the researcher has a double role as a teacher and researcher, observing and interacting first-hand with the participants in the classroom. Convenient purposive sampling will be utilized for the collection of data from the students, regarding their engagement in the classroom, interaction with the environment and responses to the MI implementations and methodologies. The intervention will be carried out during the academic year 2022–2023. Different MI strategies will be implemented as a daily practice in the classroom aiming to achieve an active teaching and learning culture. Data collection will encompass the videorecording of lessons, a teacher log, lesson plans and feedback from the students in different forms.

Aligning with the progression framework by Moon and Webster (2019), the expected results of this research are presented along four nested layers of different MI strategies that successfully contribute to the students' PA levels while being simultaneously sustainable for the teacher, the student and the classroom.

Keywords: Movement integration, Physical activity, Primary education

References

- D'elia, F., Tortella, P., Sannicandro, I., & D'isanto, T. (2020). Design and teaching of physical education for children and youth. *Journal of Human Sport and Exercise*, 15(4), S1527–S1533.
<https://doi.org/10.14198/jhse.2020.15.Proc4.48>
- Moon, J., & Webster, C. A. (2019). MI (my) Wheelhouse: A Movement Integration Progression Framework for Elementary Classroom Teachers. *Journal of Physical Education, Recreation and Dance*, 90(7), 38–45. <https://doi.org/10.1080/07303084.2019.1644258>
- Webster, C. A., Starrett, A., Rehling, J., Chen, B., Beets, M. W., & Weaver, R. G. (2020). Understanding Elementary Classroom Teachers' Use of Movement Integration Resources. *Frontiers in Education*, 5. <https://doi.org/10.3389/feduc.2020.00056>

Paper 3. Movement integration in upper secondary school – practical cues and experiences on integrating movement in upper secondary school from a practitioner's perspective

Thomas Friman, Vasa Övningsskola, Finland

The international physical activity recommendations advocate that children and adolescents aged seven to seventeen years old should be physically active for at least sixty minutes per day. Moreover, physical activity should be versatile and consist of vigorous endurance-type activities, and activities that improve muscle fitness, bone strength, and flexibility (WHO, 2020). The results of the Finnish LIITU report (2021) that examined physical activity patterns among adolescents aged 16–20 years are alarming. Only fourteen percent of the age group met the recommendations of sixty minutes of physical activity per day (Kokko et al., 2020). Thus, the Finnish national agency of education initiated a program called Finnish schools on the move, aiming at promoting physical activity in schools. The most recent add to the program focuses on facilitating movement in comprehensive schools and secondary vocational schools (Haapala, 2017).

The main aim of this presentation is to introduce teacher and student experiences on integrating movement from the program Övis in movement. The aim of the program Övis in movement is to provide increased daily movement opportunities, contribute to the joy of movement, and facilitate ergonomics in the classroom before, during and after the school day. The program is based in Vasa Övningsskola, which is a Finnish teacher training school with three hundred and eighty students. The pros and cons of the program are discussed based on teacher observations and informal student interviews.

The program has been successful in introducing a wide variety of new daily movement opportunities for students, such as treasure hunts, physical challenges, and pop-up dances. The joy of movement has experienced a positive upswing through exercise campaigns, and walking or biking to school, and ergonomics have improved after standing tables, saddle chairs, sit balls, and office bikes were introduced in the classrooms. It has been demanding to involve all students in the different activities and to inspire teachers' in integrating movement with academic content.

Keywords: Adolescents, Physical activity, Health promotion

References

- Chaput, J. P., Willumsen, J., Bull, F., Chou, R., Ekelund, U., Firth, J., Jago, R., Ortega, F. B., & Katzmarzyk, P. T. (2020). 2020 WHO guidelines on physical activity and sedentary behaviour for children and adolescents aged 5–17 years: summary of the evidence. *International Journal of Behavioral Nutrition and Physical Activity*, 17(1), 1–9.
- Haapala, H. (2017). *Finnish schools on the move: Students' physical activity and schoolrelated social factors*. Liikunnan ja kansanterveyden julkaisuja 336.
- Kokko, S., Hämylä, R., Martin, L., Rinta-Antila, K., Villberg, J., Simonsen, N., ... & Välimaa, R. (2021). *Nuorten liikuntakäyttäytyminen Suomessa: LIITU-tutkimuksen tuloksia 2020*. Valtion liikuntaneuvoston julkaisuja.

Paper 4. Preservice secondary subject teachers' experiences, attitudes and application of movement integration in academic classroom

Janina Enkvist Snellman, Åbo Akademi University, Finland

Movement integration has positive implications for secondary students, thus extending previous findings on primary students. The MI method can be an effective way of increasing in-school physical activity without reducing academic time (Romar et al., 2020). Teachers have a central role in implementing MI in schools and they report positive experiences with and perceptions of MI after implementing it during academic lessons (van den Berg et al., 2017; Webster et al., 2017).

Teacher education occurs early in teachers' careers, learning about MI in that setting allows them to incorporate the resulting knowledge and skills in their classrooms. Therefore, they may feel willing to use MI as part of their routine classroom practices. (Romar et al., 2020).

The aim of the study is to explore how Finnish preservice subject teachers apply movement in their teaching and to find out what affects the subject teacher's use of MI.

In the study, subject teachers applied an integrated approach to infuse physical activity into a required teacher-preparatory course. Data was collected through six individual interviews and five written essays, during spring semester 2020.

Movement integration was a new concept for the preservice teachers and their experience positively influenced their beliefs regarding the use of that concept in academic lessons. Most of preservice subject teachers noted that MI can be easily incorporated into secondary academic classrooms and reported positive experiences after implementing it during academic lessons.

In order to apply MI in academic classroom, you have to incorporate MI in the subject teacher education. All the preservice subject teachers were influenced by the teacher-preparatory course during their studies. They reported information, knowledge and inspiration as important factors in order to apply MI in academic classroom.

Keywords: Subject teacher education, Movement integration, Physical activity

References

- van den Berg, V., Salimi, R., de Groot, R. H., Jolles, J., Chinapaw, M. J. & Singh, A. S. (2017). "It's a Battle You want to do it, but how will you get it done?": Teachers' and principals' perceptions of implementing additional physical activity in school for academic performance. *International Journal of Environmental Research and Public Health*, 14(10), 1160.
- Romar, J.-E., Björkgren, M., Enkvist Snellman, J., Ruostekoski, A., Harjunpää, P., & Juslenius, V. (2020). Preservice secondary subject teachers incorporating movement integration into classroom practice. *Teaching and Teacher Education*.
- Webster, C. A., Russ, L., Vazou, S., Goh, T. L., & Erwin, H. (2015). Integrating movement in academic classrooms: Understanding, applying and advancing the knowledge base. *Obesity Reviews*, 16(8), 691–701.

Symposium 1J: Nordidactica-session

NOTE! MOVED TO SESSION 1!

Chair: **Anuleena Kimanen**, University of Turku and the editorial board of Nordidactica

This interactive session will focus on the Nordic open-access journal on subject didactics *Nordidactica. Journal of Humanities and Social Science Education*. The journal was founded in 2011 and publishes articles both in English and in Nordic languages. The aim of the Journal is to be a venue for research relevant to school, teacher education and to academy. The main foci of the journal include studies of teaching and learning in Geography, History, Civics, Religion and Political Science but the journal also welcomes articles in which these questions are dealt with in a broader sense.

Link to the Journal webpage: <https://journals.lub.lu.se/nordidactica/about>

We wish to invite all participants interested in the Journal, its topics and its developments in this session. In the session we will present and discuss various issues concerning the journal. The session consists of the following activities.

1. Description of the Journal's background and aims
2. Statistics from the past years
3. Panel discussion with the editorial board: Challenges and future opportunities of publishing research on subject didactics in Geography, History, Civics, Religion and Political Science
4. Q & A: scope of the journal, peer review process, thematic special issues, etc.
5. General discussion, ideas and suggestions.

Keywords: Journal, Subject didactics, Publishing, Editors

Symposium 3I: The Rationale of and Subject-specific Research from the Danish Centre for Primary and Lower Secondary Education Research (part 1)

Organiser: **Nikolaj Elf**, University of Southern Denmark

Discussant: **Sofia Jusslin**, Åbo Akademi University, Finland

This symposium presents and discusses the rationale of and ongoing research from the Danish Centre for Primary and Lower Secondary Education Research. The centre is a strategic collaboration between University of Southern Denmark, Danish University Colleges, and other national and international research environments. The center's vision is to conduct practice-oriented research in, with and for the primary and secondary school sector (cf. www.sdu.dk/en/cfgrund). The center is mission-driven, both idealistically and at the same time pragmatically striving to rethink and experiment with schooling focusing on how a good life for children relate to teaching excellence and school development in a world we would like to imagine as sustainable but is currently quite the opposite. The six symposium presentations explore how such a research programme could be theoretically framed and empirically operationalised through subject-specific research. Research questions are: How could school-subject research tap into the center vision and mission, and what does it require in terms of disciplinary and interdisciplinary research?

Keywords: Primary and lower-secondary education, Mission-driven research, Education for Sustainable Development, Science teaching, History teaching, L1 literature teaching across Scandinavian countries, L2 teaching, Interdisciplinary teaching

Paper 1: The Rationale of the Danish Centre for Primary and Lower Secondary Education Research

Nikolaj Elf, University of Southern Denmark

In this presentation, the background and rationale of the Danish Centre for Primary and Lower Secondary Education Research (the Centre in the following, cf. www.sdu.dk/cfgrund) are introduced and discussed.

Considering background, the Centre was a strategic initiative funded, in the first 3-year period from 2020–2023, by the University of Southern Denmark (SDU) as part of a university strategy informed by the UN Sustainability Goals. From 2023 and on, the Centre will be funded as a partnership between SDU and university colleges inclined to pursue a vision and mission – in brief, a rationale – developed by the Centre researchers and its leadership.

Focusing on the rationale, the declared *vision* of the Centre is to conduct ‘practice-oriented approach *in, with and for* the primary and secondary school sector’. The centre emphasises exploratory, participatory and value-driven research that strives at both understanding and pragmatically altering, even improving, the rationales and practices of current schooling in close collaboration with all relevant actors. This rationale is informed by both well-established sociocultural and phenomenological research on practice architectures that emphasise the dialogical and intersubjective relations between utterances, practices and actors (Elf,

2021; Kemmis et al., 2014) as well as more comprehensive holistic research paradigms such as systemic research that emphasises child and school development as constituted by multiple emergent and dynamic processes (Bronfenbrenner, 1979; Meadows, 2008) and post-humanistic research that challenges the idea of child and school development in any instrumental way (e.g., Jensen, 2022).

Furthermore, the Centre is *mission-driven* (Mazzucato, 2018). This implies, in the case of the Centre, that we strive to rethink and experiment with schooling focusing on how a good life for children might relate to teaching excellence and school development from a sustainability perspective. While these concepts have a long history in educational research, this mission statement raises fundamental questions of how we would conceptualise a good life, excellent quality teaching, school development, sustainability in contemporary life, and, not the least, how these concepts might be related to and co-shaping each other in positive ways.

Keywords: Practice-research, Mission-driven research, A good children's life, Teaching excellence, School development

References

- Bronfenbrenner, U. (1979). *The ecology of human development: experiments by nature and design* (3rd ed.). Harvard University Press.
- Elf, N. (2021). The surplus of quality: How to study quality in teaching in three QUINT projects. In M. Blikstad-Balas, K. Klette, & M. Tengberg (Eds.), *Ways of Analysing Teaching Quality: Potentials and Pitfalls* (pp. 53–88). Scandinavian University Press.
<https://doi.org/https://doi/pdf/10.18261/9788215045054-2021-02>
- Jensen, M. P. (2022). *Skriversubjektivitet i det multimodale danskfag: En posthuman undersøgelse af affekt, krop og materialitet i skriveundervisningen* [Doctoral dissertation, Aalborg University]. København.
- Kemmis, S., Wilkinson, J., Edwards-Groves, C., Hardy, I., Grootenboer, P., & Bristol, L. (2014). *Changing practices, changing education*. Springer.
- Mazzucato, M. (2018). Mission-oriented innovation policies: challenges and opportunities. *Industrial and Corporate Change*, 27(5), 803–815. <https://doi.org/10.1093/icc/dty034>
- Meadows, D. H. (2008). *Thinking in Systems: A Primer*. Earthscan.

Paper 2. How can we understand and describe school-subject didactics?

Dorthe Carlsen, University College South/SYD, Denmark

This presentation addresses the symposium's overall research question: *How could school-subject research tap into the center vision and mission* by presenting and discussing a theoretical understanding of school-subject didactics. The specific research question for this presentation is: *How can one understand and analyze a subject didactically?* Despite the L1 subject being the largest in primary schools, research of *the subject as a school subject* is sparse. At the same time there is a need for meta-didactics and a well-developed subject didactic language to discuss both the subject and L1 education – including

the subject's role and function in school (Erixon & Green, 2020). This is necessary to strengthen the teacher's subject didactic choices. Both within research into teacher competences more generally and within research into teachers' teaching in L1 specifically, the importance of the teacher's understanding of subjects, teaching, learning and the function of the school is pointed out as decisive for the teaching they carry out (Biesta et al., 2015).

A draft for how 'school subject didactics' can be understood is presented. The argument is made that school-subject didactics must reflect both the subject and the general didactics, as well as having a general pedagogical aim. Consequently, school-subject didactics is presented as 'didactically embedded', where school subjects are obliged to the pedagogical task of the school (Klafki, 1983/2002; von Oettingen, 2017). Therefore, notions of the school are essential in school-subject-related didactics. This understanding of school-subject-related didactics' is based on an understanding of subject didactics as a discipline that must include at least three areas: normative didactics, descriptive didactics, and meta-didactics. Finally, the presented draft of an architecture for a didactic way of understanding, describing, and analyzing school subjects is set up for discussion – including the question of whether this architecture can function as a general didactic architecture?

Keywords: Subject didactics, General subject didactics, L1

References

- Biesta, G., Priestley, M., & Robinson, S. (2015). The role of beliefs in teacher agency, *Teachers and Teaching: theory and practice*, 21(6), (624–640). doi:10.1080/13540602.2015.1044325
- Carlsen, D. (2021). *Danskididaktiske forståelsesmåder* [Doctoral dissertation, Aarhus University].
- Erixon, P.-O., & Green, B. (2020). Rethinking L1 Education in a Global Era: The Subject in Focus. In B. Green & P.-O. Erixon (Eds.), *Rethinking L1 Education in a Global Era. Understanding the (Post-)National Subjects in New and Difficult Times*. Springer
- Klafki, W. (1983/2002). Anden studie. Skolens samfundsmæssige funktioner og pædagogiske opgaver. In B. Koch-Priewe, H. Stübiger, & W. Hendricks (Eds.), *Skoleteori, skoleforskning og skoleudvikling i politisk-samfundsmæssig kontekst. Udvalgte studier*. Hans Reitzels Forlag.
- von Oettingen, A. C. (2017). De der lever sammen, må også gå i skole sammen: dannelse, paradokser og idealer. In L. Moos (Ed.), *Dannelse: kontekster, visioner, temaer og processer* (pp. 193–217). Hans Reitzels Forlag.

Paper 3. Inquiry-based literature education (QUALE) in a Nordic perspective

Vibeke Christensen, University of Southern Denmark

In a Danish intervention project, *Quality in Mathematics and Danish* (abbreviated KiDM in a Danish context), the subproject focusing on Danish aimed at raising 8th grade students' literature competence by conducting inquiry-based literature teaching. The project was designed as a mixed-methods study including a RCT-study that showed increased literary competence while qualitative observations and interviews revealed challenges regarding the opening focus on experience and the continuing steered openness in the inquiry-based literature teaching (Hansen et al., 2019; 2020).

In continuation, within the framework of the Nordforsk Center of Excellence *QUINT* (Quality in Nordic Teaching) the inquiry-based literature education approach from the KiDM project is expanded to Norwegian and Swedish classrooms and gives the opportunity to explore how the experience strategy and the steered openness in inquiry-based literature teaching is adapted and enacted in 8th grade classrooms in the Nordic countries.

Inquiry-based literature education is characterized by seven strategies of which the second, experience, is central as the opener for the ongoing steered openness throughout the literature teaching (Hansen & Gissel, 2021). The openness requires a positioning (Harré & Van Langenhove, 1991) of the students as experts of their understanding and the teachers as a participant in or facilitator of a literature dialogue. These positions differ from the positions in the dominating IRE-dialogue in most classrooms and therefore constitutes an important prerequisite for the steered openness.

The study is conducted as a qualitative intervention study. Video observation is used in one class in each country (Jewitt, 2012). All participating teachers and a group of students from each participating class are interviewed before and after the intervention.

Data are coded with respect to positioning and the strategy exploration. At the time of writing the study is still ongoing; however, based on preliminary findings we expect to identify difficulties for the teachers to position the students as experts and the students rejecting the expert role. Furthermore, we expect to find engaged classroom dialogue when the positioning succeeds.

Keywords: Literature education, Lower secondary school, Qualitative study

References

- Hansen, T. I., & Gissel, S. T. (2021). Undersøgende litteraturundervisning. In *Undersøg litteraturen!: Engagerende undervisning i æstetiske tekster* (pp. 39–54). Akademisk Forlag.
- Hansen, T. I., Elf, N., Gissel, S. T., & Steffensen, T. (2019). Designing and testing a new concept for inquiry-based literature teaching: Design Principles, development and adaptation of a large-scale intervention study in Denmark [Special issue on Systematically Designed Literature Classroom Interventions: Design Principles, Development and Implementation, ed. by M. Schrijvers, K. Murphy, & G. Rijlaarsdam]. *L1 – Educational Studies in Language and Literature*, 19. <https://doi.org/10.17239/L1ESLL-2019.19.04.03>
- Hansen, T. I., Elf, N. F., Misfeldt, M., Gissel, S. T., & Lindhardt, B. K. (2020). *Kvalitet i dansk og matematik: Et lodtrækningsforsøg med fokus på undersøgelsesorienteret dansk-og matematikundervisning*. U. o. L. Ministeriet for Børn, Danmarks Lærereforening, Skolelederforeningen.
- Harré, R., & Van Langenhove, L. (1991). Varieties of positioning. *Journal for the theory of social behaviour*, 21(4), 393–407.
- Jewitt, C. (2012). An introduction to using video for research. *NCRM Working Papers*, 03/12. <http://eprints.ncrm.ac.uk/2259/>

Symposium 3J: Native-level language teaching to support pupils' bilingualism in national languages in Finland

Chair: **Siv Björklund**, Åbo Akademi University

In officially bilingual Finland, the Finnish and Swedish language groups have their own educational paths, where the other national language is an obligatory school subject. In the national curriculum, the Finnish/Swedish as second national language is divided into different syllabi depending on the level and starting grade. One of them is a native-level language syllabus meant for Finnish-Swedish bilingual pupils, i.e., native-level Finnish in Swedish-medium schools and native-level Swedish in Finnish-medium schools.

The aim of our symposium is to increase the theoretical underpinnings and practical implications of Swedish respectively Finnish as second national language subjects in native-level language didactics. We discuss the native-level language education from the viewpoints of the curriculum, teachers, and pupils. The findings contribute to develop Finnish versus Swedish as second national language subjects as well as to present educational approaches for language teaching of bilinguals in other contexts.

Paper 1. Native-level language syllabi in Finnish and Swedish as second national languages: a curriculum study

Katri Hansell¹, Sanna Heittola², Sofie Henricson², Annika Lassus¹ & Michaela Pörn¹

¹Åbo Akademi University, Finland ²University of Helsinki, Finland

The national bilingualism in Finland is reflected in two parallel school systems. The national curricula (GLGU, 2014; POPS, 2014) for Finnish and Swedish as second national languages are parallel and both languages are divided into three syllabi: a shorter syllabus that starts in 6th grade, a longer syllabus that starts in the first grades, and a native-level language syllabus intended for Finnish-Swedish bilingual pupils. In Finnish-medium schools, most pupils study Swedish according to the shortest alternative and very few schools offer the native-level language syllabus. In Swedish-medium schools, the opposite pattern emerges, as most pupils study Finnish as a long syllabus, of which about half on native-level (Hansell et al., in press; Heittola & Henricson, in press; Nummela & Westerholm, 2020).

The aim of this presentation is to scrutinize the content of the national curricula for native-level language syllabi for the two national languages within comprehensive education. The approach is comparative with a focus on how curriculum descriptions meet language realities and practices in school, and addresses the following research questions:

- What characterizes the description of native-level language syllabi and distinguishes them from the long second national language syllabi in Finnish vs. Swedish?
- Are there differences between the description of the native-level language syllabi in Finnish and Swedish, and if so, what are they?

The native-level syllabi emphasize the importance of acknowledging and supporting pupils' bilingual background and cultural identity and of developing their language skills. Whereas the two native-level syllabi in curriculum are mostly similar, studies (Hansell et al., in press; Heittola & Henricson, in press; Pörn et al., 2021) show that the practical implementations of them differ. This raises a question whether the opportunities to study the second national language are as equal as described in the curricula.

Keywords: Native-level language didactics, Bilingualism, Curriculum studies

References

- GLGU. (2014). *Grunderna för läroplanen för den grundläggande utbildningen 2014*. Finnish National Agency for Education.
- Hansell, K., Pörn, M., & Rebers, I. (In press). Modersmålsinriktad finska i svenskspråkiga skolor i Finland – en debattanalys. *Ainedidaktikka*.
- Heittola, S., & Henricson, S. (In press). Äidinkielenomaisen ruotsin oppimäärän kartoitustutkimus. *VAKKI Publications 14*, Workplace Communication V.
- Nummela, Y., & Westerholm, A. (2020). "Det är bra att börja i tid" – undervisningen i finska i de svenskspråkiga skolorna. Rapporter och utredningar 2020:5. Finnish National Agency for Education.
- POPS. (2014). *Perusopetuksen opetussuunnitelman perusteet 2014*. Finnish National Agency for Education.
- Pörn, M., Forsman, L., Hansell, K., Lassus, A., Löf, Å., Maunu, N., & Östman, T. (2021). *Mofi-stigen: En handbok för mofi-lärare i 1-9*. Åbo Akademi University. <https://urn.fi/URN:ISBN:978-952-12-4103-1>

Paper 2. Native-level language teaching as a path towards bilingual competence: A study from pupils' perspective

Katri Hansell, Michaela Pörn & Ida Rebers, Åbo Akademi University, Finland

In bilingual Finland, both Finnish and Swedish language groups have their own parallel school systems and study the second national language as an obligatory school subject. There are different syllabi in the second national language, one of them being native-level language syllabi meant for Swedish-Finnish bilingual students.

The native level Finnish-language syllabus (NaFi) has been widely applied in Swedish-medium schools, where up to 40% of the pupils today are bilingual Swedish-Finnish. Nevertheless, there is only limited research on the topic (Hansell et al., in press). The aim of this presentation is to increase the understanding of what the NaFi pupils themselves identify as central in the native-level language teaching with starting point at following research questions:

1. Who is the target group for native-level Finnish language teaching according to the pupils themselves?
2. What do the pupils identify as central for developing their bilingual competence?

The data consists of 14 audio recorded focus group interviews with altogether 42 NaFi pupils at grades 6 and 9 from three bilingual regions in Finland. We analyse the data on a group level using qualitative thematic analysis (Braun & Clarke, 2006).

The results show that regarding the target group (rq1), the pupils especially emphasize language competence, the bilingual language background and an active use of both languages (cf. Skutnabb-Kangas, 1981; Sundman, 1998). Regarding the bilingual competence (rq2) the pupils expressed a holistic view on language skills emphasizing themes like grammar, literacy, lexicon, subject-specific language and oral language skills. The results show that the pupils appreciate the native-level language teaching and see the Finnish language as an asset in studies, working life and in participating in society. Thus, native-level language teaching can be seen as a means for supporting social justice for the bilingual students' agency in society.

Keywords: Native-level Finnish-language syllabus, Language education, Bilingualism

References

- Braun, V., & Clarke, V. (2006). Using thematic analysis in psychology. *Qualitative Research in Psychology*, 3(2), 77–101. <https://doi.org/10.1191/1478088706qp063oa>
- Hansell, K., Pörn, M., & Rebers, I. (In press). Modersmålsinriktad finska i svenskspråkiga skolor i Finland – en debattanalys. *Ainedidaktikka*.
- Sundman, M. (1998). *Barnet, skolan och tvåspråkigheten*. Universitetstryckeriet.

Paper 3. Teacher perspectives on native-level Swedish language didactics: Swedish as first language for bilingual pupils in Finnish-medium schools

Siv Björklund¹, Sanna Heittola², Sofie Henricson², Raili Hilden² & Hanna Lehti-Eklund²

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The school system in Finland is divided into Finnish-medium and Swedish-medium schools, where pupils with Finnish as a first language usually attend Finnish-medium schools, while pupils with Swedish as a first language attend Swedish-medium schools. In both Finnish- and Swedish-medium schools, there are bilingual pupils, with Finnish and Swedish as their two first languages. Since 2004, the national curriculum includes a native-level Swedish syllabus intended for these bilingual pupils in Finnish-medium schools (POPS, 2014). However, the syllabus is still a largely unknown and under-researched school subject that is only offered at very few Finnish-medium schools (Heittola & Henricson, in press).

In our presentation, we analyze teacher perspectives on the native-level language didactics of Swedish in Finnish-medium schools. Our data include five interviews with Swedish teachers giving native-level instruction in Swedish, as well as a web-based questionnaire. The small sample reflects the size of this school subject. Of the 270 Swedish teachers and 241 principals that answered our questionnaire, only eight teachers and seven principals said that they offer native-level Swedish to their pupils.

Our analysis addresses the following research questions:

- What do the teachers consider as the specifics of the native-level Swedish language syllabus?
- What aspects of the language didactics are emphasized, and what are not, e.g., as regards grammar, communicative skills, academic language proficiency?
- How do the teachers reflect on evaluation in a native-language school subject in Swedish as a second national language?

Teachers interpret and implement the curriculum based on attitudes, opinions and pedagogical choices (Erss, 2017; Stodolsky & Grossmann, 1995). As teachers are key figures, it is important to explore how they understand the native-level syllabus in Swedish, what questions they emphasize, how they tailor instruction to meet individual needs and what views they express on evaluating a native-level language syllabus taught as the second national language.

Keywords: Native-level language didactics, Swedish, Teacher perspectives

References

- Erss, M. (2017). Curriculum as a political and cultural framework defining teachers' roles and autonomy. In T. Autio, L. Hakala & T. Kujala (Eds.), *Opetussuunnitelmatutkimus: Keskustelunavauksia suomalaisen kouluun ja opettajankoulutukseen* (pp. 193–221). Tampere University Press.
- Heittola, S., & Henricson, S. (In press). Äidinkielenomaisen ruotsin oppimäärän kartoitustutkimus. *VAKKI Publications 14*, Workplace Communication V.
- POPS. (2014). *Perusopetuksen opetussuunnitelman perusteet 2014*. Finnish National Agency for Education.
- Stodolsky, S. S., & Grossman, P.L. (1995). The impact of subject matter on curricular activity: An analysis of five academic subjects. *American Educational Research Journal*, 32(2), 227–249.

Symposium 4H: Education, Bildung, and subject didactics in the Anthropocene network (EBAN): The meaning of Bildung in times of unprecedented changes

Chair: **Kenneth Nordgren**, Karlstad University, Sweden

The EBAN network (Education and Bildung in the Anthropocene) is a Nordic network that takes a special interest in the intersection between Bildung and subject didactics in education. The Anthropocene is a call to address the consequences of the endangered Earth system as well as normative questions of guilt, justice, and human self-understanding. It is often emphasized that these challenges require transdisciplinary approaches – and new ideas of what it means to be educated. However, real-world problems also require deep knowledge that derives from specialised epistemological communities. Therefore, an important research problem is how mainstream education rooted in traditional epistemic conceptions can become relevant to a renewed Bildung in the Anthropocene. In this symposia the EBAN network will specifically address implications for the notion of Bildung by asking: *How can the dynamics between the Anthropocene, Bildung and specialized knowledge be regarded, and what epistemological implications might result for education?*

References

- Chakrabarty, D. (2018). Anthropocene time. *History and Theory*, 57(1), 5–32.
- Kvamme, O. A. (2021). Rethinking bildung in the anthropocene: the case of Wolfgang Klafki. *HTS Theological Studies*, 77(3), 1–9.
- Nordgren, K. (2023). History curriculum in the Anthropocene; how should we tell the story? In R. J. Tierney, F. Rizvi, & K. Erkican (Eds.), *International Encyclopedia of Education* (vol. 7; pp. 296–307). Elsevier. <https://dx.doi.org/>
- The Education and Bildung in the Anthropocene Network.
<https://www.kau.se/en/csd/samverkan/education-and-bildung-anthropocene-eban>

Paper 1. Eco-reflexive *Bildung*-oriented Subject Didaktik

Jesper Sjöström, Malmö University, Sweden

This session contribution refers to the question: *How can the dynamics between the Anthropocene, Bildung and specialized knowledge be regarded, and what epistemological implications might result for education?*

Bildung is an old and complex concept with several elements and dimensions. A socio-political dimension is the most recent. This paper will highlight important elements in contemporary conceptualizations of *Bildung* (e.g., Sjöström & Tyson, 2022). One such conceptualization is called eco-reflexive *Bildung* (e.g., Sjöström, 2018) and can be understood as a renewed understanding of *Bildung* in the Anthropocene epoch. *Bildung*-views are always connected to values, visions and worldviews as well as identity (e.g., Sjöström, 2018). Contemporary *Bildung*-interpretations emphasize moral-philosophical-existential-political dimensions of *Bildung* and can be seen as an educational meta-theory for (subject) didactics in

the Anthropocene. Based on such a meta-theory, it is interesting to discuss which consequences it has for subject didactics, didactic models and educational practice more generally. What can an eco-reflexive *Bildung*-oriented subject didactics look like and what theory- and practice-based didactic models (in a broad sense) need to be developed? (A follow up question is how to define the term “didactic model”?) One suggestion for such an eco-reflexive *Bildung*-oriented didactic model (Yavuzkaya et al., 2022) will be presented. It takes chemistry as an example and relates to ideas of powerful knowledge and knowings as well as transdisciplinary approaches. Carlgren (2020) has problematized powerful knowledge and instead suggested powerful knowings. This concept emphasizes that disciplinary knowledge is embedded in persons and actions. It is about “knowledge-as-a-means-for-cultivation-of-human-powers” (p. 324). In “transdisciplinary (subject) Didaktik”, content (in a broad sense) is central, but the context is beyond the individual school subjects (e.g., Sjöström & Rydberg, 2018). It can for instance be about didactic models concerning complex controversial societal issues involving several different school subjects in support of eco-reflexive *Bildung*.

References:

- Carlgren, I. (2020). Powerful knowns and powerful knowings. *Journal of Curriculum Studies*, 52(3), 323–336.
- Sjöström, J. (2018). Science teacher identity and eco-transformation of science education: comparing Western modernism with Confucianism and reflexive Bildung. *Cultural Studies of Science Education*, 13(1), 147–161.
- Sjöström, J., & Rydberg, C. (2018). Towards transdisciplinary Didaktik – didactic modelling of complex controversial issues teaching for reflexive Bildung and sustainability. In I. Eilks, S. Markic, & B. Ralle (Eds.), *Building Bridges Across Disciplines for Transformative Education and a Sustainable Future* (pp. 3–15). Shaker Verlag.
- Sjöström, J., & Tyson, R. (2022). *Didaktik för lärande och bildning*. Liber.
- Yavuzkaya, M., Clucas, P., & Sjöström, J. (2022). ChemoKnowings as Part of 21st Century Bildung and Subject Didaktik. *Frontiers in Education*, 7, 869156. doi: 10.3389/educ.2022.869156

Paper 2. Geography – a school subject for Bildung in the anthropocene!?

Kenneth Nordgren, Karlstad University, Sweden

This paper aims to discuss the implications of the anthropocene challenges for geography education. Findings from Earth Systems Science as well as research by Quaternary Geology Stratigraphers designate the Anthropocene as an ecological and epochal threshold. Humans are profoundly changing the ecology of the planet earth and have become a geological force. The relationship between "nature" and "culture" has been a central component in the constitution of geography as a science as well as a school subject (Bladh, 2020). It can be argued that geographical knowledge has profound educational potential to explore and make sense of relations and interconnections in the context of a complex world and a dynamic earth system (Castree, 2015). However, scientific specialization have made the links between disciplinary knowledge and the holistic idea of geography challenging (Demeritt, 2009). For geographers, the Anthropocene leads to a revisiting and re-evaluation of ideas on human-nature relationships, including those between human and physical geography as well as the perspective of sustainable

development. A key challenge is to consider how the relationship between people and the environment can be approached from different temporal and spatial scale perspectives. A deeper engagement with the Anthropocene from a geographical Bildung perspective would also encompass many 'wicked problems' with related ethical questions, putting the values dimension of geography education to the fore.

References

- Bladh, G. (2020) Geografi som vetenskap och skolämne. I L. Dessen Jankell & D. Örbring (Eds.), *Geografididaktik för lärare 4–9* (pp. 17–32). Gleerups.
- Castree, N. (2015). The anthropocene: a primer for geographers. *Geography*, 100(2), 66–75.
- Demeritt, D. (2009). From externality to inputs and interference: framing environmental research in geography. *Transactions of the Institute of British Geographers*, 34, 3–11.

Paper 3. The lived landscapes – a perspective in history

Marianne A. Leth, Via University College, Denmark

This presentation discuss anthropological perspectives, more precisely the concepts of 'the lived landscapes' (Hastrup, 2018), as a focal point for understanding historical consciousness as a trans-historical and trans-cultural interpretive process (Nordgren, 2019). Investigating how human activities and society making is entangled in the landscapes, open up for an understanding and reconfiguration of the relations between the concepts of nature – culture – society in time and space. In traditional historiography, nature has been separated from culture (Chakrabarty, 2018). I examine whether this can be used as a key to opening up local history (entangled with global perspectives) based on the lived landscape as a focal point for history teaching, which perspectives this can contribute to historical perception and understanding, and the probing questions this might give the opportunity to ask. The question is whether the anthropological perspectives can open up expanded interpretations of concepts of time and space, continuity and change, traditions and development, spirituality, aesthetics, narratives, the local and global perspective, in order to embrace the unprecedented changes in the Anthropocene new normality (Chakrabarty, 2018; Hastrup, 2013; 2018; Latour, 2017; Nordgren, 2019).

1. What are specific characteristics of anthropological concepts with a focus on 'lived landscapes', and what perspectives can these have for the content- and epistemological thinking in history education?
2. What perspectives do outdoor didactics and local surroundings as a learning arena and field of inquiry provide history content repertoire and methodological thinking?

The answers and discussions of the questions are empirically based on teaching examples, and a current collaborative project: "KUBU – Competence- and experience-oriented Teaching for Sustainable Development". The possible and new perspectives in history didactics will be discussed and put into a tentative relation to the pedagogical ideal: Cautiousness, as a possible perspective in history education (Paulsen, 2022).

References

- Chakrabarty, D. (2018). Anthropocene time. *History and Theory*, 57(1), 5–32.

- Hastrup, K. (Ed.). (2013). *Anthropology and Nature*. Routledge.
- Hastrup, K. (2018). Antropologiens landskaber [Fratrædelsesforelæsning 23. Februar 2018]. *Tidsskriftet Antropologi*, 7.
- Latour, B. (2017). *Facing Gaia. Eight Lectures on The New Climate Regime*. John Wiley.
- Leth, M., & Vogt, M. (2021). Sustainability – Local explorations – Global awareness. 'Bildung'-making for a sustainable future in an interdisciplinary teacher education course (nature and technology/history)? *Futures of Education, Culture and Nature – Learning to Become*, 1.
<https://tidsskrift.dk/FECUN/article/view/130665/176332>
- Nordgren, K. (2019). Boundaries of historical consciousness: a Western cultural achievement or an anthropological universal? *Journal of Curriculum Studies*, 51(6), 779–797.
[doi:10.1080/00220272.2019.1652938](https://doi.org/10.1080/00220272.2019.1652938)
- Paulsen, M. (2021). Cautiousness as a new pedagogical ideal in the Anthropocene. In K. B. Petersen, K. von Brömssen, G. H. Jacobsen, J. Garsdal, M. Paulsen, & O. Koefoed (Eds.), *Rethinking education in light of global challenges: Scandinavian perspectives on culture, society and the Anthropocene*. Routledge.
<https://nexs.ku.dk/english/research/sport-individual-society/physical-activities-during-school-and-leisure/teachout-english/>

Paper 4. The Anthropocene, Bildung, and subject didactics in religious education and worldview education

Jesper Garsdal, Aarhus College of Education, Via University, Denmark

This paper reflects on some possible fruitful relations between the idea of the Anthropocene, Bildung, and subject didactics in religious education and worldview education. The paper will unfold these possible relations in four steps: First, by presenting some of the ways the idea of the Anthropocene has been and can be interpreted in ways that relate to topics that traditionally have been the concern of religion, worldviews, and/or metaphysics. Secondly, by considering the complexity of the idea of Bildung as an educational and cultural idea in local, regional, and international contexts and how this complexity might become relevant when related to the idea of the Anthropocene. 3) give an example of how (some elder) forms of subject didactics in religious education (Grimmitt, 1973; 1987) can be related to Bildung, despite not being a part of the continental tradition of Bildung as such. 4) point out how Grimmitt's existential notion of religious (and, by extension, worldview) didactics as reflecting on a plurality of worldviews, might cast some light over how subject didactics in religion might offer one of several fruitful subject didactical perspectives when considering the tensions between the global and planetary perspectives on the Anthropocene and what this means for a renewed notion of Bildung.

Keywords: Anthropocene, Bildung, Religious education, Worldview education

References

- Chakrabarty, D., & Latour, B. (2021). *The climate of history in a planetary age*. The University of Chicago Press.

- Grimmitt, M. (1978). *What can I do in R.E.? A consideration of the place of religion in the twentieth-century curriculum with suggestions for practical work in schools* (2nd ed). Mayhew-McCrimmon.
- Grimmitt, M. (1987). *Religious education and human development: The relationship between studying religions and personal, social and moral education* (1st ed.). McCrimmons.
- Zalasiewicz, J., Waters, & al. (2021). The Anthropocene: Comparing Its Meaning in Geology (Chronostratigraphy) with Conceptual Approaches Arising in Other Disciplines. *Earth's Future*, 9(3). <https://doi.org/10.1029/2020EF001896>

Symposium 4I: The Rationale of and Subject-specific Research from the Danish Centre for Primary and Lower Secondary Education Research (part 2)

Organiser: **Nikolaj Elf**, University of Southern Denmark

Discussant: **Sofia Jusslin**, Åbo Akademi University, Finland

This symposium presents and discusses the rationale of and ongoing research from the Danish Centre for Primary and Lower Secondary Education Research. The centre is a strategic collaboration between University of Southern Denmark, Danish University Colleges, and other national and international research environments. The center's vision is to conduct practice-oriented research in, with and for the primary and secondary school sector (cf. www.sdu.dk/en/cfggrund). The center is mission-driven, both idealistically and at the same time pragmatically striving to rethink and experiment with schooling focusing on how a good life for children relate to teaching excellence and school development in a world we would like to imagine as sustainable but is currently quite the opposite. The six symposium presentations explore how such a research programme could be theoretically framed and empirically operationalised through subject-specific research. Research questions are: How could school-subject research tap into the center vision and mission, and what does it require in terms of disciplinary and interdisciplinary research?

Keywords: Primary and lower-secondary education, Mission-driven research, Education for Sustainable Development, Science teaching, History teaching, L1 literature teaching across Scandinavian countries, L2 teaching, Interdisciplinary teaching

Paper 4. Students' explanations and solutions of issues related to the current climate crisis using scientific and mathematical modelling in a model-based inquiry unit

Claus Auning, University College South/UC Syd, Denmark

This research investigates the ways in which scientific and mathematical modelling as a design feature support or constrain students' understanding, explanations, and solutions of issues related to the current climate crisis and how students experience the relevance of mathematical modelling in a model-based inquiry (MBI) unit.

To support lower secondary students in using scientific and mathematical modelling, we developed an MBI unit based on a complex natural phenomenon, a cloudburst event, in which scientific and mathematical modelling was essential to understanding and explaining the phenomenon. The unit was developed following a design-based study that took place in close collaboration with eight teachers from three southern Danish primary and lower secondary schools. The project also included two educators and 15 from a teacher education programme, and the unit consisted of 12 lessons taught over a one-week period. The sample group consisted of 40 students who were 14–16 years of age. For the analysis of the students' mathematical modelling, the researchers used an adaptation of the modelling cycle proposed by Blum and Leiß (2005) to interpret the students' models. A subset of participants ($n = 7$) was also

interviewed by the researchers about their models to gain insights into how students experienced the relevance of scientific and mathematical modelling in the MBI unit.

The results show that the majority of the students 37 out of 40 were able to understand the mathematical problem in the anchoring phenomenon and model the phenomenon from a mathematical perspective. The students emphasized that the scientific and mathematical modelling process made sense to them, and, in the students' opinion, mathematics contributed to a greater understanding of the complex phenomenon, helped them better understand the various elements of the anchoring phenomenon and provide them with solutions to climate change issues.

Keywords: Design-based study, Model-based inquiry, Climate change issues

References

- Auning, C. (2022). Undersøgelsesbaseret modellering i matematik og naturfag i skolen. *MONA – Matematik- Og Naturfagsdidaktik*, 22(4). <https://tidsskrift.dk/mona/article/view/134913>
- Blum, W., & Leiß, D. (2005). "Filling up" – The Problem of Independence-Preserving Teacher Interventions in Lessons with Demanding Modelling Tasks. In M. Bosch (Ed.), *CERME-4 – Proceedings of the Fourth Conference of the European Society for Research in Mathematics Education*. Guixol.
- Gilbert, J. K., & Justi, R. (2016). *Modelling-based Teaching in Science Education*. Springer.
- Schwarz, C. V., Reiser, B. J., Davis, E. A., Kenyon, L., Achér, A., Fortus, D., Shwartz, Y., Hug, B., & Krajcik, J. (2009). Developing a learning progression for scientific modeling: Making scientific modeling accessible and meaningful for learners. *Journal of Research in Science Teaching*, 46(6), 632–654. <https://doi.org/10.1002/tea.20311>
- Windschitl, M., Thompson, J., & Braaten, M. (2008). Beyond the scientific method: Model-based inquiry as a new paradigm of preference for school science investigations. *Science Education*, 92(5), 941–967.

Paper 5. Sustainability in Language Teaching

Line Krogager Andersen (presenting) & **Signe Hannibal Jensen**, University of Southern Denmark

Susana, S. Fernández, Aarhus University

Anne-Marie Fischer-Rasmussen, University College of Northern Denmark

Annette Søndergaard Gregersen, Københavns Professionshøjskole, Denmark

Søren Hattesen Balle & Merete Olsen, Absalon University College, Denmark

Sustainability is a keyword both on a global, national and local scale, and enters schools in the form of education for sustainable development. In this talk, we explore the role of sustainability in language teaching and the contribution of the language subjects to sustainable development.

The relationship between language teaching and sustainable development may be viewed from at least three perspectives: 1) a thematic perspective relating to the content dimension of language teaching (de la Fuente, 2022), which includes a global citizenship perspective promoted by intercultural competence in the language classroom (Sharma, 2020); 2) a language ecology perspective focusing on the development and maintenance of sustainable language ecologies and teaching/learning practices (Krogager Andersen,

in progress) and 3) a language sustainability perspective targeting the role and status of Danish as a second language and migrant languages within the educational system.

In this talk, we will discuss each of these perspectives based on cases from current and previous Danish development and research projects. As for the thematic/global citizenship perspective, we will present ongoing development projects focusing on transnational themes relating to sustainable development and discuss how working with such themes in the curriculum contributes to the relevance of language teaching in the current political and environmental context. We will also discuss the role of intercultural competence for the development of global citizenship (Byram et al., 2013; Sharma, 2020) and point to the contributions of language teaching in this context. As for the language ecology perspective, we will present our analyses of the role of ecological and sustainability-oriented language teaching with examples from research and development projects targeting didactic recycling in language teaching (Balle & Olesen 2022) and collaboration across language subjects. Finally, we will provide examples of language sustainability through the integration of multilingual children's language resources in the classroom.

Keywords: Language teaching, Sustainability, Interculturality

References

- Balle, S. H., & Olsen, M. (2022). Forberede feedback i praksis. *Unge pædagoger*, 2, 96–102.
- Byram, M., Holmes, P., & Savvides, N. (2013). Intercultural communicative competence in foreign language education: questions of theory, practice and research. *The Language Learning Journal*, 41(3), 251–253. <https://doi.org/10.1080/09571736.2013.836343>
- De la Fuente, M. J. (2022). *Education for Sustainable Development in Foreign Language Learning: Content-Based Instruction in College-Level Curricula* (1st ed.). Routledge. <https://doi.org/10.4324/9781003080183>
- Krogager Andersen, L. K. (Manuscript in preparation). Forandringsprocesser i skolens økologi. In N. Elf, T. Skovgaard, & C. Svabo (Eds.), *Bæredygtige skoleliv?*
- Sharma, N. (2020). *Value-Creating Global Citizenship Education for Sustainable Development: Strategies and Approaches* (1st ed.). Springer International Publishing.

Paper 6. Sustainability and the green transition: From mono-curricular to cross-curricular practices in and beyond school

Martin Hauberg-Lund Laugesen & Nikolaj Elf, University of Southern Denmark

While green transition is often associated with sustainable development of agriculture, energy, transportation and waste management (IPCC, 2018; Richardson, 2020), the term also has important educational implications. Since the 1980s, the educational paradigm of Education for Sustainable Development (ESD) has led to a manifold of disciplinary practices privileging natural science subjects (Læssøe, 2020). Simultaneously, other green transition-oriented teaching paradigms, e.g., Environmental and Sustainability Education and Eco-literacy, have emerged and contested the ESD paradigm while offering teaching practices that accentuate the 'whats, hows and whys' – that is, the contents, methods and justifications – of green transition teaching in alternative ways (Karrow & DiGiuseppe, 2020; McLaren, 2013).

In this paper presentation, findings from the ongoing research project *Green Transition in Lower-Secondary Education (GO)* are presented. The Green Transition project is a mixed-methods study based on ethnographic fieldwork in three schools linked to a survey. In the presentation, challenges and opportunities for genuinely cross-curricular teaching related to sustainability and the green transition are examined and exemplified through ethnographic data. Based on a study of qualitatively different ways in which the UN sustainable development goals are taught in the three cases, and theoretically inspired by progressivist philosophy of education and transformative learning theory that can be seen as specifying aims and qualities emphasized by the *Bildung* tradition (Öhman & Sund, 2021), the paper analyses the potentials and difficulties posed by complex and dilemma-ridden topics like sustainability and green transition when addressed in teaching practices. Findings suggest a need for a multi-faceted didactics of subject-specific as well as cross- and trans-curricular teaching contributing to an eco-systemic and practice-oriented re-calibration of schooling, teaching and educational ecologies.

Keywords: Education for Sustainable Development (ESD), Subject-specific and cross-disciplinary perspectives, Ethnographic research

References

- IPCC. (2018). Summary for Policy Makers. In V. Masson-Delmotte et al., *Global Warming of 1.5°C. An IPCC Special Report on the impacts of global warming of 1.5°C above pre-industrial levels and related global greenhouse gas emission pathways, in the context of strengthening the global response to the threat of climate change, sustainable development, and efforts to eradicate poverty*. IPCC. doi:[10.1017/9781009157940](https://doi.org/10.1017/9781009157940)
- Karrow, D. D., & DiGiuseppe, M. (Eds.). (2020). *Environmental and Sustainability Education: Canadian Perspectives*. Springer
- Læssøe, J. (2020). Bæredygtighedsbegrebet og uddannelse. In J. A. Lysgaard & N. J. Jørgensen (Eds.), *Bæredygtighedens pædagogik: Forskningsbaserede bidrag*. Frydenlund.
- McLaren, P. (2013). Seeds of Resistance: Towards a Revolutionary Critical Ecopedagogy. *Socialist Studies*, 9(1), 84–108.
- Richardson, K. (2020). *Hvordan skaber vi bæredygtig udvikling for alle?* Informations forlag
- Öhman, J., & Sund, L. (2021). A Didactic Model of Sustainability Commitment. *Sustainability*, 13(3083), 1–22. <https://doi.org/https://doi.org/10.3390/su13063083>

Symposium 5H: Materialist framings of knowledge in educational practice and research

Chair: **Mark Hardman**, UCL Institute of Education, United Kingdom,

Materialist framings (for example, social materialism, post-humanism, new materialism, Deleuzian philosophy...) 'de-centre' the human, by taking seriously the agency of the non-human. In education, they extend and challenge existing theoretical perspectives and beg difficult questions about learning and teaching, what disciplinary knowledge is, and the responsibilities we have as researchers.

This symposium draws on collaboration between researchers in Finland and England in which we identify and answer key questions in how to engage consideration of materiality in doing educational research. Considering a range of contexts, educational disciplines and theoretical perspectives, four key questions emerged for us, which we attend to through four papers:

1. What is meant by material and its agency?
2. What can materialist framings say about pedagogy and its entanglement with materiality?
3. How do materialist framings broaden learning and post-human assessment?
4. How might materialist framings inform researcher positionality and ethical responsibilities in education research?

Paper 1. What is meant by the material and its agency?

Katy Wallace & Mark Hardman, UCL Institute of Education, United Kingdom

As materialist frames are increasingly applied to education, we describe what is meant by matter and agency within these frames. We draw in the theoretical work of Barad (2007) and Deleuze (2004 [1968]) to reject distinctions between mind and matter, objective and subjective. Educational settings are *assemblages* (Cole, 2011), in which there is no ontological distinction between teacher, students, textbooks, computers, laptops, chairs, tables, rules, expectations, knowledge, gestures, movement, music, aesthetics, hopes, dreams, fears and much more. This de-centres agency by recognising that both matter and meaning emerge together (Hardman et al., 2022).

We answer critics such as Harman (2011) who worry that materialist frames do not allow for separate objects or existing knowledge. Materialist frames do recognise the objects, buildings, knowledge, relations, culture and policy of education. However, these are not seen as pre-determined and universal; each instance is unique, spatio-temporally situated and in a process of continual *becoming*. In this way, matter becomes vibrant, generative, and restrictive as new understandings and new patterns emerge.

After introducing these insights, we exemplify them in this paper through considering a single textbook within an English history classroom (Wallace, 2019). Despite copies of the textbook being used historically all over the country, we describe how teaching and learning were entangled with the physical, affective and situated dimensions of this specific book. We thus illustrate how materialist framings explain how

knowledge and practice is replicated, and yet always in a state of becoming; meaning and matter emerging anew.

This paper lays the foundation for the rest of this symposium, where materialist framings provide new insights and new challenges in considering pedagogy, school buildings, assessment, ethics, knowledge and research.

Keywords: Material, Agency, Research

References

- Cole, D. R. (2011). *Educational life-forms: Deleuzian teaching and learning practice*. Sense Publishers.
- Deleuze, G. (2004 [1968]). *Difference and Repetition*. Continuum.
- Hardman, M., Taylor, B., & Daly, C. (2022). An Inquiry into Teacher Agency and Professional Development: The Introduction of the Early Career Framework in England. In *The Palgrave Handbook of Teacher Education Research* (pp. 1–26). Springer International Publishing. https://doi.org/10.1007/978-3-030-59533-3_19-1
- Harman, G. (2011). Realism without Materialism. *SubStance*, 2(125), 52–72.
- Wallace, K. (2019). *A new materialist turn toward the textbook: An exploration of the relationship between history textbooks and historical narratives* [Unpublished MA Thesis]. University of British Columbia.

Paper 2: What can materialist framings say about pedagogy and its entanglement with materiality?

Katri Sarkio, University of Helsinki, Finland

John-Paul Riordan, Canterbury Christ Church University, United Kingdom

Ketan Dandare, UCL Institute of Education, United Kingdom

Pedagogy is a contested concept and can focus on the teacher, learner, teacher *and* the learner or, as in this paper, interactions of teacher, learner, and the material world. Extending both Hardman et al. (2022) and Orlikowski (2007), we see pedagogy, curriculum, assessment, digital mediation, and indeed school spaces like classrooms, as intimately entwined.

This paper uses Sarkio, Korhonen and Hakkarainen's (2022) Sociomaterial Interdependence Framework and Riordan et al.'s (2021a) Pedagogy Analysis Framework to investigate how materialist framings can inform understandings of pedagogy.

Sarkio et al.'s (2022) project involved exploration of how school spaces, digital instruments, and teachers' practices co-develop in the design of a new upper-secondary school building in Finland. It used an online teacher survey (n = 31), teacher interviews (n = 10) and a participatory group workshop for teachers (n = 39), all in 2020. The team conducted quantitative analysis of the survey, thematic analysis of semi-structured interviews, and document analysis of teachers' collaborative workshop outputs, using an interpretivist framing.

Riordan et al.'s (2021b) project investigated pedagogical problems in the classroom, such as when science and religion topics interact. Data were collected in 2019 from video recordings of two school lessons (n = 60), one with 7-year-old and the other with 10-year-old pupils, teacher interviews (n = 2) and two pupil group interviews (n = 12), all collected in 2019. A methodology of Straussian Grounded Theory was applied in the use of lesson video analysis, teacher verbal protocol interviews, pupil group verbal protocol interviews, and semi-structured teacher interviews.

We discuss the implications of sociomateriality for classroom practice, pedagogical education, and school design from two perspectives. Tools like the Sociomaterial Interdependence Framework and Pedagogy Analysis Framework can help educational researchers untangle the agency of the material in classrooms and schools.

Keywords: Pedagogy, Sociomaterial, Buildings

References

- Hardman, M., Riordan, J., & Hetherington, L. (2022). A Material-Dialogic Perspective on Powerful Knowledge and Matter within a Science Classroom. In B. Hudson, M. Stolare, N. Gericke, & C. Olin-Scheller (Eds.), *Powerful Knowledge and Epistemic Quality Across School Subjects*. Bloomsbury Academic.
- Orlikowski, W. J. (2007). Sociomaterial practices: Exploring technology at work. *Organization Studies*, 28(9), 1435–1448. <https://doi.org/10.1177/0170840607081138>
- Riordan, J. P., Hardman, M., & Cumbers, D. (2021a). Pedagogy Analysis Framework: a video-based tool for combining teacher, pupil & researcher perspectives. *Research in Science & Technological Education*. doi:10.1080/02635143.2021.1972960
- Riordan, J. P., Revell, L., Bowie, B., Woolley, M., Hulbert, S., & Thomas, C. (2021b). Understanding and explaining pedagogical problem solving: a video-based grounded theory study of classroom pedagogy. *Research in Science & Technological Education*. doi:10.1080/02635143.2021.2001450
- Sarkio, K. J., Korhonen, T., & Hakkarainen, K. (2022). Tracing teachers' perceptions of entanglement of digitally-mediated educational activities and learning environments: a practice-oriented method. *Learning environments research*. <https://doi.org/10.1007/s10984-022-09442-w>

Paper 3: How do materialist framings broaden learning and post-human assessment?

Miikka Turkkila & Kalle Juuti, University of Helsinki, Finland

Materialist and post-human framings broaden how we perceive learning and assessment within a culture of education focusing on individuals. The different frames view, for example, agency and the agency of the material and non-humans differently. Actor-network theory (Latour, 2005) sees non-humans having agency in themselves whereas Barad (2007) sees agency shared within the assemblages of humans and material. However, what they have in common is that materials are not considered as mere resources; it is acknowledged that actions of matter affect humans also. This implies that materials used in learning activities affect learning and learning is situated within assemblages or networks of humans and non-humans. Learning becomes the entangled phenomena of human and non-humans rather than the

individual processes of a student. This is especially relevant for science education as the disciplinary knowledge of science is created with digital and technological devices.

As disciplinary knowledge creation, education has become entangled with technology and pedagogy cannot be separated from technology (Fawns, 2022). Through these different entanglements learning is seen as complex phenomena with several interdependent elements, not just the material and students. One such key pedagogical element is assessment, and the post-humanist view considers contextual factors essential, affecting learning. Assessment is guided by curriculum and learning goals and thus it has agency on teaching practices, imposing on all classroom activity. In practice, assessment might not be explicitly evident in classroom interactions even if it is ever present and inseparable from learning. However, there have been hardly any discussions of how we should broaden perspectives on assessment based on the post-humanist frames. If new insights from materialist framings are not used to guide assessment practices together with teaching practices, there is a risk that the insights for learning provided by these frames are forgotten.

Keywords: Material, Post-human, Assessment

References

- Barad, K. M. (2007). *Meeting the universe halfway: quantum physics and the entanglement of matter and meaning*. Duke University Press.
- Fawns, T. (2022). An Entangled Pedagogy: Looking Beyond the Pedagogy—Technology Dichotomy. *Postdigital Science and Education*, 4(3). <https://doi.org/10.1007/s42438-022-00302-7>
- Latour, B. (2005). *Reassembling the social: an introduction to actor-network-theory*. Oxford University Press.

Paper 4: How might materialist framings inform researcher positionality and ethical responsibilities in education research?

Emma Jones, UCL Institute of Education, United Kingdom

Varpu Mehto, University of Helsinki, Finland

Materialist framings are providing new ways for thinking about educational practices, and examples from this symposium have shown how we might reconsider textbooks, classroom pedagogy, school buildings, and assessment. Materialist framings also bring into question the ontological, epistemological, and ethical foundations of education research and its associated knowledge claims. This paper will draw specific attention to the ways materialist framings can inform debates about researcher positionality and ethical responsibilities in education research.

After locating the move from ‘being’ to ‘becoming’ in Western thought, this paper will explore how materialist framings can trouble the idea of a researcher who occupies a stable and coherent subject position. It goes on to ask what this troubling does for claims to reflexivity in education research and why diffraction (Barad, 1996; 2007; Haraway, 1992; 1997) may offer an alternative way of articulating and attending researcher positionality. This paper also asks what happens to ethics in research if we take the

turn to process ontologies and materialist framings seriously. On the one hand this might involve rethinking the temporalities of research ethics as ‘becoming’ brings into question de rigueur ideas in Western academia such as ‘informed consent’. On the other hand, this might involve attending to the vibrancy of matter and how affect, agency, and the non-human, as part of the wider assemblage of relations that coalesce as a researchable event, shift who and what researchers have ethical responsibility for.

Keywords: Positionality, Ethics, Knowledge Production

References:

- Barad, K. (1996). Meeting the universe halfway: Realism and social constructivism without contradiction. In L. H. Nelson & J. Nelson (Eds.), *Feminism, Science and the Philosophy of Science* (pp. 161–194). Kluwer.
- Barad, K. (2007). *Meeting the Universe Halfway: Quantum Physics and the Entanglement of Matter and Meaning*. Duke University Press.
- Fox, N.J., & Alldred, P. (2021). *Applied Research, Diffractive Methodology, and the Research-Assemblage: Challenges and Opportunities*. Sociological Research Online.
- Haraway, D. (1992). The promises of monsters: A regenerative politics for inappropriate/d others. In L. Grossberg, C. Nelson, & P. Treichler (Eds.), *Cultural Studies* (pp. 295–337). Routledge.
- Haraway, D. (1997). *Modest_witness@second_millennium. Femaleman_meets_Oncomouse*. Routledge.

Symposium 5I: Didaktik in practice: Searching for the *what* in the *how*

Chair: **Jörgen Mattlar**, Uppsala University, Sweden

Our starting point is in the subjects Swedish, Spanish and Civics, with students aged 14–18. We discuss and problematize when the *how* is foregrounded and the *what* is elusive and undefined in literary history (Swe), spoken production and interaction (Spa) and disciplinary literacy (Civ).

We want to shed light on the *what* in relation to the concept *Bildung*. “In the Didaktik tradition *Bildung* is what comes out of the unique meeting between students and contents” (Hopmann, 2007, 118). This relates to *Bildung* as grasping the world, inside and outside of the classroom context. Is the content distinguishable in the teaching and learning activities? What happens with the *what* in subject education when the *how* is in focus?

Reference

Hopmann, S. (2007). Restrained teaching: The common core of Didaktik. *European educational research journal*, 6(2), 109–124.

Paper 1. Scaffolding Language and Content Learning in a Multilingual Civics Classroom

Viktorija Waagaard, Uppsala University, Sweden

Literacy development is fundamental to democracy. Explicit language learning is crucial, in parallel with subject and personal development (Garcia & Li Wei, 2018). A conscious focus on disciplinary literacy, lesson structure (Christie, 1997; 2002), first- and second-order concepts can make the *what* in teaching and learning visible and can scaffold students’ understanding of words, concepts, analysis and critical thinking (Sandahl, 2015).

This project’s aim is to contribute with ways to widen and deepen discussions about making visible working with words, concepts and analysis. In order to strengthen multilingual and monolingual students’ literacy in civics, investigating words and concepts in classroom work and student texts could be one way.

Analytic frameworks used are curriculum macro genres (Christie, 1997; 2002), expansions of words (Halliday, 2014), first- and second-order concepts of social science (Sandahl, 2015), analyzed in terms of structure elements and activity chains (Christie, 1997, 2002). First-order concepts are facts and words, often linked to specific working areas/themes. Second-order concepts are disciplinary tools that help to organize, analyze and critically review social science, although not linked to specific working areas/themes (Sandahl, 2015).

In classroom observations and student texts, coherent units were mapped to examine the actual structure elements, activity chains and first- and second-order concepts. One finding is that content building is the most common structure element in the classroom work. Advantages of this method is that the material is authentic and the working methods are current. The criticism expressed concerns the difficulty in

mapping observations and that first- and second-order concepts are often used overlapping (Sandahl, 2015).

Focusing on lesson structure, combined with a focus on first- and second-order concepts could improve the work of developing and strengthening students' disciplinary literacy. Literacy and understanding of the democratic society are closely related to equity as well as to the concept of Bildung.

Keywords: Disciplinary literacy, Civics, Concepts

References

- Christie, F. (1997). Curriculum macrogenres as forms of initiation into a culture. In F. Christie & J. R. Martin (Eds.), *Genres and Institutions* (pp. 134–160). Cassell.
- Christie, F. (2002). *Classroom Discourse Analysis. A Functional Perspective*. Continuum.
- García, O., & Wei, L. (2018). *Translanguaging. Flerspråkighet som resurs i lärandet*. Natur & Kultur.
- Halliday, M. A. K., & Matthiessen, C. (2014). *An Introduction to Functional Grammar*. Routledge.
- Sandahl, J. (2015). *Medborgarbildning i gymnasiet. Ämneskunnande och medborgarbildning i gymnasieskolans samhälls- och historieundervisning*. Stockholms universitet.

Paper 2. Searching for content in teaching and learning speaking – studying Spanish as a modern language in lower secondary school

Fredrika Nyström, Uppsala University, Sweden

In the foreign language classroom, the target language is both the means and the medium of instruction. The syllabus of modern languages stipulates the learning aim, the *what*, as on the one hand acquisition of linguistic and communicative skills, and on the other the content of communication, e.g., vocabulary around everyday activities. (Skolverket, 2021)

In the present study, teachers and students were interviewed about their perceptions, beliefs and attitudes towards teaching and learning speaking. The aim is to investigate expectations and experiences about teaching and learning to speak Spanish in lower secondary school. Spoken skills in second and foreign languages are generally considered more difficult to teach, learn and assess than writing, listening and reading. (Goh & Burns, 2012; Thornbury, 2005)

Through content analysis, the data was classified under the didactic questions *who*, *what* and *how* (Jank & Meyer, 1997), in order to identify the essence of each meaning unit. The qualitative analysis of both teacher and student interviews resulted in a wider range of categories under the didactic question *how* than *what*. When describing the classroom practices, the learning aim is mainly the linguistic content, typically verbal structures or gender of nouns, and not the spoken skill itself, including its relational, strategic and sociolinguistic competences. Neither is there a focus on the nature of spoken communication, e.g. to understand and express meaning, a result that brings a famous quote to mind: *There is all the difference in the world between having something to say and having to say something*. (Dewey, 1943/1990, 56)

Keywords: Modern languages, Spoken interaction

References

- Dewey, J. (1943/1990). *The school and society: and, The child and the curriculum*. University of Chicago Press.
- Goh, C. C. M., & Burns, A. (2012). *Teaching speaking: a holistic approach*. Cambridge University Press.
- Jank, W., & Meyer, H. (1997). Didaktikens centrala frågor. In M. Uljens (Ed.), *Didaktik – teori, reflektion och praktik* (pp. 47–71). Studentlitteratur.
- Skolverket. (2021). *Kursplan i moderna språk för grundskolan*.
- Thornbury, S. (2005). *How to teach speaking*. Longman.

Paper 3. What happens with the what in teaching and learning literary history when there is a focus on the how?

Jonas Johansson, Uppsala University, Sweden

Previous studies in teaching and learning literature show that upper secondary school students have difficulties in understanding why they should learn literary history (Bergman, 2007; Olin-Scheller, 2006). In reply to that, Johansson (2022) explores what it is in the teaching and learning literary history that sparks students' interest, according to themselves.

As an answer to *what* it is in the teaching and learning literary history that spark students' interest following content-related themes where found: intertextuality; comparisons between different periods; epochs, authors and works; and aesthetic elements. Johanssons' study also reveals other aspects important for sparking interest in literary history. These aspects emphasise the *how* rather than being an answer to the question of what. According to the students the teaching should be varied, have a clear structure, be inclusive and the teacher should also be engaged and passionate in teaching. However, these later aspects seem to apply regardless of the content of teaching (Havik & Westergård, 2020; Hirsh & Segolsson, 2020) and not specific to the teaching and learning literary history.

It is against this background the presentation aims to discuss what happens with the what in teaching and learning literary history when there is a focus on the how. Using examples from classroom practice, the how and the what in teaching and learning literary history will be discussed as problematized in relation to the concept of Bildung. Bildung is after all “what comes out of the unique meeting between students and contents” (Hopmann, 2007, 118).

Keywords: Literary didactics, Literary history, Teaching of literature

References

- Bergman, L. (2007). *Gymnasieskolans svenskämnen: En studie av svenskundervisningen i fyra gymnasieklasser* [Doctoral dissertation, Lund University]. <http://mau.diva-portal.org/smash/get/diva2:1404464/FULLTEXT01.pdf>

- Havik, T., & Westergård, E. (2020). Do Teachers Matter? Students' Perceptions of Classroom Interactions and Student Engagement. *Scandinavian Journal of Educational Research*, 64(4), 488–507.
<https://doi.org/10.1080/00313831.2019.1577754>
- Hopmann, S. (2007). Restrained teaching: The common core of Didaktik. *European educational research journal*, 6(2), 109–124.
- Johansson, J. E. (2022). Elevperspektiv på vad som väcker intresse för litteraturhistoria. *Educare*, (3), 98–129.
- Olin-Scheller, C. (2006). Mellan Dante och Big Brother: En studie om gymnasieelevers textvärldar [Doctoral dissertation, Karlstad university].
<http://kau.diva-portal.org/smash/get/diva2:6137/FULLTEXT01.pdf>

Symposium: Peace as experience and hope in education: Children and youth visual practices as didactic design and peace education

Chairs: **Eva Ahlskog Björkman**, Åbo Akademi University, Finland & **Hannah Kaihoviirta**, University of Helsinki, Finland

Mårten Björkgren, Åbo Akademi University, Finland

The purpose of the symposium is to generate a platform for a research-based discussion, hands-on workshop and art exhibition on how children and youth approach and visualize peace in education. The symposium starts with a research-based introduction, from the chairs on fantasia and akrasia (Aristotelian approach), and a visual semiotic analysis of children's pictures of peace understanding. After the workshop, where the participants meet the exhibition, expert pairs discuss existential interpretations on children's and youth's understanding of peace as experience and hope. Finally, visual art teachers discuss possible didactic design in education. The symposium participants are actively involved in the discussion. The symposium offers a delicate possibility to discuss how past, present and future always plays a central role in learning and creative practice.

Symposium 6H: Fostering entrepreneurial Capabilities: A way to reorient School Subjects towards creating a desirable global Future

Chair: **Christine Namdar**, University of Helsinki/ Åbo Akademi University, Finland

Humanity has arrived at a historical bifurcation point that requires a fundamental transformation both in our individual worldviews and our societal structures. This poses new challenges to the educational systems. Human beings possess inherent capabilities that can be described as entrepreneurial which refers to competencies to imagine, to will, to collaborate, to question, and to create. By realising the entrepreneurial potential of the students and by carrying out the curricular transformations, education can create spaces for fostering global citizenship and make a valuable contribution to the creation of a desirable global civilisation.

Paper 1. Entrepreneurship as curricular orientation (online presentation)

Kamran Namdar, NiloNora Center for Transformative Education, Finland

The current school system globally is based on the notion of school subjects that students have to master to a specified standard, to be able to move forward within the educational system. The choice of the subjects offered, as well as their contents, could be defined as adaptive in relation to the prevalent societal order. This adaptive and tradition-based mode is dangerous in the historical predicament humanity is facing currently, as it has arrived at a developmental bifurcation point, requiring a transformative approach.

The aim of this study is to discuss the possibility of a core to school curricula, in relation to which, the various subject contents could be integrated and oriented with individual and collective transformation, i.e. the creation of a new global civilization (Brameld, 1956), in mind. This potential to be realized is the inherent human capability we would like to refer to as entrepreneurship, using this term in its deepest and broadest sense.

The paper will seek to demonstrate the correlations between the key elements of the required societal transformations and those of entrepreneurship as a viable core for school curricula, drawing on a recently developed notion of "Entrepreneurship for a Cause" (Hoppe & Namdar, in press).

This paper is basically philosophical in nature, providing a conceptual analysis of entrepreneurship as an educational purpose and a curricular organizing principle. The concept of entrepreneurship, in this sense, will be treated as an ideal type (Weber, 1949).

The ideal type of entrepreneurship as an educational key concept will be tested in the light of a number of empirical examples of curricular and educational praxis, consequently highlighting the ways in which the notion and practice of entrepreneurship can help transform the role of the school and discussing the aspects of the concept that require amendments.

Keywords: Entrepreneurship, Curriculum, Transformation

References

- Brameld, T. (1956). *Toward a Reconstructed Philosophy of Education*. The Dryden Press.
- Hoppe, M., & Namdar, K. (In press). Towards Entrepreneurship for a Cause: Educating Transformative Entrepreneurial Selves for a Better World. *Entrepreneurship Education and Pedagogy*.
- Weber, M. (1949). *The Methodology of the Social Sciences*. The Free Press.

Paper 2. Teachers for the Future? The agentic approach in Education policies

Jonna Kangas, University of Helsinki, Finland

During the last few years all policy documents together with the policy system in Finland, in the field of early childhood education, have been renewed. This has had its effects on the practices on the field as well. However, simultaneously the changing values and beliefs of teachers' roles, responsibilities, and future skills have remained hidden in the renewal process. In this presentation, I analyse the current steering documents aimed at both practical implementers and teacher educators in the ECEC sector from the perspectives of values and beliefs considering the Finnish society, conception of the child and learning, human dignity, language, and cultural awareness in teachers' pedagogical practices.

In the policy documents, the teachers are expected to both understand the important role of childhood in human life, but also support children to join and participate in society. Critical understanding of the curriculum together with reflective practices was mentioned in all the steering documents. The changing society increases the need for social, cultural, and language awareness for teachers. To become a societal actor a teacher needs competencies to teach equality through "...equality education, language awareness and cultural diversity, democratic education, sex education, gender awareness, social justice" states the guiding document by Finnish Teacher Students Association, SOOL (2019). In general, teachers were expected to shape the values of society to support children to become responsible human beings. Teachers were also expected to be role models of a sustainable and inclusive society for children but also for their families. Finally, teachers were expected to be able to act as relational agents and agents for sustained professional development. Teachers' agency was linked with the values of society as well as imagining the future and understanding both the desired and the realized future.

Our results suggest that teachers are given a large number of different roles as well as values across the different documents. Teachers are asked to be more of everything now and in the future, without any guidance on how to reach these goals.

Keywords: Teacher, Agency, Education policy

References

- Harju-Luukkainen, H., & Kangas, J. (2021). The Role of Early Childhood Teachers in Finnish Policy Documents: Training Teachers for the Future? In W. Boyd & S. Garvis (Eds.), *International Perspectives on Early Childhood Teacher Education in the 21st Century* (pp. 65–80). Springer Nature. https://doi.org/10.1007/978-981-16-5739-9_5
- Kangas, J., & Harju-Luukkainen, H. (2021). What is the future of ECE teacher profession? Teacher's agency in Finland through the lenses of policy documents. *The Morning Watch: Educational and Social Analysis*, 47(1), 48–75. <https://journals.library.mun.ca/ojs/index.php/mwatch/article/view/2261>

Paper 3. Youths' perceptions of characteristics connected to radicalization: Entrepreneurial Competencies utilised as either – Destructive or Constructive Agents of Change

Christine Namdar, University of Helsinki/ Åbo Akademi University, Finland

When looking at research relating to at-risk youth, it is apparent that research pertaining to them is directed at either exploring youth as a problem and seldom studied in terms of their positive potential. One of the main factors contributing to this contradiction is the way they are treated as objects whose problems need to be solved. Their views and understandings are seldom incorporated in trying to understand the root causes of radicalisation.

The aim is to look at youths' perspectives of the factors that potentially contribute to radicalisation of an individual or a group. Thereby, the presented analysis is contributing towards filling the gap in this multidisciplinary field with (a) educational research approach and particular focus on the role of educational institutions, and (b) perspectives of youth themselves.

The findings derive from a broader research project funded by the Academy of Finland, "Growing up Radical? - The role of educational institutions in guiding young people's worldview construction" (2018–2023), Universities of Oxford, Helsinki, Stockholm and Åbo Akademi. The Mixed Methods Research design with data (N=1675) from Finnish national matriculation examinations, where the students responded to questions related to the factors behind radicalisation.

Youth raise meaning/purpose as some of the important factors in the process of becoming radicalised. They describe traits and skills that can be connected to both destructive and constructive choices or actions in individual behaviour. Our results illustrate ways of thinking related to elements that correspond generally with non-cognitive entrepreneurial competences, such as risk-taking and the ability to network. The youths' views, individual agency seems to play a key role in choosing which direction these characteristics are used into. These competences, if redirected with the right education, could qualify them as potential agents of change.

Keywords: Radicalisation, Competencies, Change agents

References

- Lackéus, M. (2022). *Den värdeskapande eleven: En handbok för meningsfullt lärande i skolan*. Studentlitteratur.
- Chell, E. (2008). *The Entrepreneurial Personality: A Social Construction*. Routledge.
- Petkovich, S., Ignatovich, A., & Galstyan, M. (2019). *Youth Research: The Essentials*. Council of Europe and European Commission.
- Namdar, C., Lagerspetz, M., Gearon, L., & Kuusisto, A. (In press). *The Radical Entrepreneur: From Destructive to Constructive Agents of Change*.

Symposium 6I: Aiming towards powerful knowledge: recontextualisation across curriculum subjects

Chair: **Mikko Puustinen**, University of Helsinki, Finland

The symposium brings together recent research undertaken by the network *Knowledge and Quality across School Subjects and Teacher Education* (KOSS). The aim of our symposium is to discuss research which revolves around notions of recontextualisation and powerful knowledge. Recontextualisation processes of disciplinary knowledge take place at societal, institutional and classroom levels; they can be intentional, unintentional, open or hidden, and are connected to purposes of education. Powerful knowledge pertains to knowledge which provides the best understanding of the natural and social worlds that we have and helps going beyond individual experiences.

To this end, the symposium will examine how recontextualisation of school subjects takes place across different curriculum subjects (history, science, L1) and on different levels (in curricula and classrooms). It will also discuss the extent that these processes can be said to support the development of knowledge that is 'powerful' in a global world, now or in the future.

Paper 1. Powerful grammatical knowledge in Finnish basic education

Jenni Marjokorpi, University of Helsinki, Finland

Perceived both as the cornerstone of liberal arts education and a useless or even harmful relic that should be abandoned, school grammar teaching is an area of great contest and dispute. This presentation is based on my doctoral dissertation (Marjokorpi, forthcoming) in which I analyse the current practices and outcomes of Finnish L1 grammar teaching as well as their relationships with the skills of text interpretation and production.

The key question I attempt to answer is: what does powerful knowledge (Muller & Young, 2019) about language consist of? Based on different types of empirical data (video recordings of classroom interaction, two tests measuring grammatical reasoning, school textbooks, and students' argumentative texts), the study illuminates the ways in which students (ca. 15 years of age) draw on their metalinguistic knowledge when they read and write texts. Secondly, I discuss the pedagogical ways in which this applying of knowledge can be supported. How can teachers act as recontextualisation agents (Hordern, 2021)? What is the role of contextualised grammar teaching (Jones et al., 2013) and L1 textbooks in making grammatical knowledge powerful for all students?

The study argues that powerful grammatical knowledge builds the students' metalinguistic understanding and their capabilities as critical readers and successful argumentative writers. Powerful grammar teaching enhances linguistic thinking and reasoning; that it provides the students with conceptual metalinguistic tools, with which to understand language structures and its use in different situations and contexts; and that it guides them to apply this knowledge as they develop as language users.

Keywords: Grammar teaching, Finnish language and literature, Powerful knowledge

References

- Hordern, J. (2021). Recontextualisation and the teaching of subjects. *The Curriculum Journal*, 32(4), 592–606.
- Jones, S., Myhill, D., & Bailey, T. (2013). Grammar for writing? An investigation of the effects of contextualised grammar teaching on students' writing. *Reading and Writing*, 26(8), 1241–1263.
- Marjokorpi, J. (In press). Merkityksellinen ja vaikuttava kieliopillinen tieto perusopetuksessa [Doctoral dissertation University of Helsinki].
- Muller, J., & Young, M. (2019). Knowledge, power and powerful knowledge re-visited. *The Curriculum Journal*, 30(2), 196–214.

Paper 2. Knowledge and aims in history curriculum for lower secondary school in England, Finland and Sweden

Mikko Puustinen, University of Helsinki, Finland

This presentation compares history curriculum for lower secondary school in England, Finland and Sweden from the perspectives of curricular aims and content. First, I compare the aims of history teaching in the three curricula. In general, the starting point of all curricula is disciplinary history, but there are also other aims, such as socialisation to society. Second, I present a comparative analysis of curriculum content. In this regard, curricula in England and Sweden include a considerable amount of substantive knowledge, which both guides and limits individual teachers. In comparison, the Finnish curriculum defines the content in a concise manner. In England, the curriculum focuses on British history, while in Finland and Sweden the perspective is a more European and global one.

Based on these analyses, I discuss the relationships between the aims and different kinds of historical knowledge in the three curricula and the extent that curricular arrangements can be said to support developing of 'powerful knowledge' (Muller & Young, 2019; Puustinen & Khawaja, 2021). Finally, I discuss the challenges and possibilities that the curricular arrangements set for teachers as intentional agents of recontextualisation (Khawaja & Puustinen, 2022; Kitson, 2020).

Keywords: History education, Recontextualisation, Powerful knowledge

References

- Khawaja, A., & Puustinen, M. (2022). Recontextualising history in primary school: discourses in the classroom. *History Education Research Journal*, 19(1).
- Kitson, A. (2020). *Teachers as Recontextualization Agents: A study of expert teachers' knowledge and their role in recontextualization process across different subjects* [Doctoral dissertation, University College London].
- Muller, J., & Young, M. (2019). Knowledge, power and powerful knowledge re-visited. *The Curriculum Journal*, 30(2), 196–214.
- Puustinen, M., & Khawaja, A. (2021). Envisaging the alternatives: From knowledge of the powerful to powerful knowledge in history classrooms. *Journal of Curriculum Studies*, 53(1), 16–31.

Paper 3. Recontextualising primary history

Amna Khawaja, University of Helsinki, Finland

Employing Bernstein's concepts of recontextualisation and pedagogic discourse, this case study aims to identify types of discourse and forms of knowledge in primary history lessons, and to explain the observations through teachers' thinking. My aim is to understand the recontextualisation process that primary teachers go through when planning and enacting history instruction.

Nine Finnish teachers were observed for nine to ten consecutive history lessons and interviewed following the observation period. The analysis is based on field notes, classroom materials and interview data. I discuss whether the discourses in the classrooms are able to support the instructional aim of historical literacy. The preliminary results show that although teachers had different discursive profiles, substantive knowledge took precedence over procedural knowledge and second-order concepts. The horizontal discourse, i.e. students' experiences and historical culture, when present, were not deconstructed through concepts and strategies specific to history. Thus, it seems that the discursive space classrooms is incompatible with that required for promoting historical literacy. In the interviews, many of the teachers expressed their unwillingness to skip topics in the textbook, which may have contributed to the predominant role of substantive knowledge.

I reflect on both the possibilities and constraints that are present in primary teachers' recontextualisation process and compare them to those of history subject teachers. Finally, I discuss to what extent primary teachers' recontextualisation process is active and intentional and consists of deliberate decision making. The preliminary results suggest that teacher education should equip primary teachers with more procedural knowledge and the means to process historical culture and students' everyday experiences through the vertical discourse.

Keywords: Recontextualization, Vertical and horizontal discourse, Recontextualisation, Primary teachers

References

- Bernstein, B. (2000). *Pedagogy, symbolic control and identity*. Rowmand and Littlefield.
- Kitson, A. (2020). *Teachers as Recontextualization Agents: A study of expert teachers' knowledge and their role in recontextualization process across different subjects* [Doctoral dissertation, University College London].
- Nokes, J. (2010) Observing Literacy Practices in History Classrooms. *Theory and Research in Social Education*, 38(4).
- Nordgren, K. (2021). Powerful knowledge for what? History education and 45-degree discourse. In A. Chapman (Ed.), *Knowing history in schools: powerful knowledge and the power of knowledge*. UCL Press.

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