

# Book of abstracts



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# Abstracts: keynotes

## Shaping Trajectories of Learning – design of new socio-digital ecologies

Ola Erstad

How technological and cultural transformations impact on people's everyday lives has become one of the key concerns of our times. This presentation will rather take the point of view of young people and how they develop as learners across diverse spaces and contexts.

Design is understood as a process by which trajectories of participation and engagement are shaped as part of evolving socio-digital ecologies. By drawing on ideas from the New London Group and their 'pedagogy of multiliteracies – design of social futures' (Cope & Kalantzis, 2000, 2015). I will link to recent conceptions of 'design futures literacies' (Morrison, 2023) and 'hyperconnectivity' (Brubaker, 2022).

My own work on 'learning lives' (Erstad, 2023) and 'platformisation of family life' (ongoing project) will represent the main empirical input. Key to this approach is an interdisciplinary understanding of how meaning-making is developed and shaped over time and across spaces.

### References

Brubaker, R. (2022). *Hyperconnectivity and Its Discontents*. New York: Polity Press.

Cope, B. & M. Kalantzis (Eds.) (2000). *Multiliteracies: Literacy learning and the design of social futures*. London: Routledge.

Cope, B. & M. Kalantzis (Eds.) (2015). *A Pedagogy of Multiliteracies: Learning by Design*. London: Palgrave Macmillan

Erstad, O. (2023). 'Understanding Learning Lives in Transition: The Cultural Dynamics of Education Among Migrant Children'. In Lee, W.O.; Goodwin, A.L. & Green, A. (Red.), *International Handbook on Education Development in Asia-Pacific*. Springer

Morrison, A. (2023). *Design Futures Literacies*. Vol. 1 and 2. See:

<http://www.fuel4design.org/index.php/2023/11/12/design-futures-literacies-2-free-e-books-published/>

# Visualisations as support for reflection and pedagogical development

Patrik Hernvall & Robert Ramberg

Embracing the theme of the conference, we will present research and developmental work, including two school developmental projects. In this, both the research process as well as the developmental projects, are illustrations of design processes. Design processes striving towards development of pedagogical practice, based on iterative critical discussions with teachers. And also, the development of research methods as well as theoretical concepts.

Research on the use of digital technology in educational contexts point at the need to conduct qualitative studies and evaluations of the technology use in a school context. Contemporary technologies of today offer opportunities in both registering and visualizing data.

In this presentation, results from a qualitative study of the use of technology to register, document and visualise data (RDV technology) are discussed. The setting is the classroom, where the use of visualisations of e.g. teachers' movements, and pupils' eye movements, are used to support teacher reflection on their practice. Data has been collected through iterative conversations with participating teachers, which in total amounts to 22 teachers from 13 different schools. In total 80 conversations of between 15 to 40 minutes each were carried out.

In this presentation, we will present tentative results from the thematic analysis. The analysis indicates that the visualisation supports teachers to reflect on their classroom practice by providing an objective representation, as a complement to subjective memory and experience. In the presentation we will also provide examples of the technology used and visualisations, as well as the method for collecting data (i.e. coaching dialogues).

## Conceptualizing design in research

Eva Insulander, Susanne Kjällander, Ola Knutsson, Fredrik Lindstrand, Staffan Selander, Eva Svärdemo Åberg, Anna Åkerfeldt

During this session we will present some of the work done by the Designs for Learning research group – from the first DFL conference in 2008 with focus on “defining the field” to this conference with the focus on “conceptualizing design in research”.

Firstly, we will outline some basic theoretic concepts within our design-oriented, multimodal perspective. Secondly, in the form of a dialogue, we will discuss how this perspective has been used in different empirical studies of for example textbooks and digital learning resources, subject-oriented studies of teaching and learning, museum studies of exhibitions and of visitor’s meaning-making, studies of toys and games, as well as of collaborative work between researchers and professionals. Finally, we will give some hints of theoretical challenges, including ethical commitments, and thoughts about future research engagements.

### References

- Arnseth, H.C.; Hanghøj, T.; Henriksen, T.D.; Misfeldt, M.; Rambeg, R. & Selander, S. (2019) (Eds.) Games and education. Designs in and for learning. Leiden & Boston: Brill/Sense.
- Björklund Boistrup, L. & Selander, S. (2022) (Eds.): Designs for research, teaching and learning. A framework for future education. London & New York: Routledge.
- Danielsson, K. & Selander, S. (2021) Multimodal texts in disciplinary education. A comprehensive framework. Cham: Springer Nature.
- Insulander, E.; Kjällander, S.; Lindstrand, F. & Åkerfeldt, A. (2017) (Eds.) Didaktik i omvandlingens tid. Text, representation, design. Stockholm: Liber.
- Kress, G. & Selander, S. (2021, 3rd ed.) Design för lärande – ett multimodalt perspektiv. Lund: Studentlitteratur.
- Kress, G.; Selander, S.; Säljö, R. & Christof Wulf (2012) (Eds.): Learning as social practice. Beyond education as an individual enterprise. London & New York: Routledge.
- Rostvall, A-L. & Selander, S. (2010, 2nd ed.) (Eds.) Design för lärande. Stockholm: Norstedts.
- Selander, S. (2017) Didaktiken efter Vygotskij. Design för lärande. Stockholm: Liber.
- van Leeuwen, T. & Selander, S. (in print). The semiotics of toys and games. The childhood artefacts that introduce us to the world. London: Bloomsbury.

# Digital touch design futures

Carey Jewitt

Design is a prospective, and forward-looking concept, a 'motor which drives semiotic change in line with social change' (Kress, 2010: 50), that brings attention to the social in social semiotics. I reflect on design in the context of digital communication through the digital remediation of touch.

Digital touch design and use is reshaping the resources for people's agentive social and material engagement through touch in profound ways for the who, what and how of touch communication including what people count as touch. Digital touch is a complex, emergent, and exploratory space for design, that is further complicated by the rapidly changing array of technological development.

I will discuss design directions for the future development of touch technologies, and the potentials to give rise to new kinds of touch. I will argue that understanding the social factors within the contexts for which digital touch is designed is key to its rethinking. In so doing, design can draw together the multimodal and multisensory concepts and categories employed or imagined by designers and users, as well as the social and semiotic resources that people use to interpret digital touch communication in meaningful ways, and I discuss how these might impact on the design of future digital touch environments.

I will illustrate that there are both gains and losses experienced through the digital touch designs, and users explore and develop their own ways of working towards meaningful touch communication. I suggest that new meanings, uses and norms will continue to emerge and morph, as digital touch enters the mainstream and new ways of touching through the digital materialise.

## References

Kress, G.R. (2010). *Multimodality: a social semiotic approach to contemporary communication*. London: Routledge.



# Abstracts: workshops, symposia and paper presentations

## **Pedagogical design in higher education: Students' engagement in authentic research projects about sustainable development**

Anja Amundrud and Ole Smørdal

Teaching and learning activities in higher education must continuously adapt to align with changes and challenges in knowledge-domains, labor-markets, and society. As education is vital for fostering an inclusive, just, and sustainable society (United Nations, 2015) learning environments, teaching practices, and how we organize education should be designed to meet societal challenges, including sustainable development (Damşa & de Lange, 2019; Rieckmann, 2018). University students must not only learn about transformation but also engage in it (Rieckmann, 2018). Thus, academics must design pedagogical approaches that foster engagement, collaboration, knowledge co-construction, and interaction, work with authentic problems, and enable students to proactively contribute to societal progress and sustainable practices (Damşa & de Lange, 2019; Rieckmann, 2018).

This study aims to explore students' engagement in a new course at the Department of Education, University of Oslo, in spring 2024. The course is part of a university-wide initiative aimed at equipping students with a comprehensive understanding of sustainability issues. The Department of Education offers a course incorporating design thinking aspects into the pedagogical design (Beligatamulla et al., 2019). The empirical material comes from the course "Technology and design in various learning environments," in which students work on authentic research projects. The students selected cases based on their interests and collaborated with stakeholders (e.g., schools, municipal administrations, or libraries) transitioning toward sustainable practices.

Research questions: 1) What characterizes student engagement in course activities? 2) What challenges do students face when collaborating with peers, teachers, and stakeholders in authentic research cases?

The course-structure guided students' design processes, including problem-solving, analyzing, ideating, and prototyping. The course encouraged specific collaborative methods, fostering a shared space for co-creating knowledge, and ended with a design expo where students presented ideas to stakeholders. Twenty-one students, two teachers, and five stakeholders participated. The data come from observations, surveys, reflective notes, and group-interviews.

Preliminary results suggest high levels of student engagement and resilience, despite challenges, including the course's intensity and complex case studies. The diverse student backgrounds and stakeholder-collaborations contributed to a richer learning experience, indicating the value of integrating authentic challenges into the curriculum. This pedagogical design, by promoting the co-construction of knowledge and problem-solving, underscores the role of learner agency and the importance of academic rigor grounded in authentic relevance. Although further analysis will follow, these findings highlight the educational benefits of this learning designs, with students as active contributors to knowledge and society.

Beligatamulla, G., Rieger, J., Franz, J., & Strickfaden, M. (2019). Making Pedagogic Sense of Design Thinking in the Higher Education Context. *Open Education Studies*, 1(1), 91–105.

Damşa, C., & de Lange, T. (2019). Student-centred learning environments in higher education. *Uniped*, 42(1), 9–26. <https://doi.org/10.18261/issn.1893-8981-2019-01-02>

Rieckmann, M. (2018). Learning to transform the world: Key competencies in ESD. In *Issues and trends in Education for Sustainable Development* (pp. 39–59). UNESCO.

United Nations Member States, D. of E. and S. A. S. D. (2015). *THE 17 GOALS | Sustainable Development*.

## **Multimodality and the affordances of co-presence for inclusion in higher education**

Arlene Archer

In a context like South Africa, it is important to consider physical access to higher education as well as epistemological access. Heightened dependence on digital platforms for teaching and learning can worsen inequalities in terms of student access and inclusion. This 'digital divide' manifests in several ways, such as inequitable access to laptops, lack of wi-fi, the high cost of data, and even basic considerations such as access to quiet spaces to work. In this context, this paper considers the affordances of physical face-to-face environments in higher education, especially concentrating on issues of access and inclusion. It draws on Goffman's (1981) notion of 'fresh talk' and Thesen's (2007) analysis of lectures as performance. Thesen argues that for students from diverse cultural and linguistic backgrounds, there is significance in the opportunity to observe and absorb information, as one does in a lecture. In a lecture, students are not required to actively communicate in spoken or written language, where accent, language proficiency, handwriting or familiarity with digital technologies, might mark them in specific ways. Besides lectures, the paper also looks at a range of other higher education contexts and focuses on how co-presence and materiality manifest in different forms of engagement and representational modes. It explores the function and importance of humour and laughter in face-to-face pedagogies, as well as the value of silence in co-presence. It argues that opening up the semiotic space of face-to-face interaction through multimodal designs for learning is important for finding innovative ways of addressing inequalities, access and diversity.

Goffman, E. 1981. *Forms of talk*. Oxford: Basil Blackwell.

Thesen, L. 2007. Breaking the frame: lectures, ritual and academic literacies. *Journal of Applied Linguistics* 4,1. 33–53.

## **Design x 3: How may new conceptualisations of the design studio inspire designs for learning – a design thinking workshop**

Ebba Berggren, Cecilia Caiman and Maria Weurlander

This workshop will use the findings of a research study of design studio pedagogy to inspire general pedagogical reflections. The design studio is the most common pedagogical format in artistic curriculums. The format stems from artistic master-apprentice pedagogy (Houghton 2016). In line with academisation, the larger student groups and demands for scientific knowledge have transformed the design studio into a mix of pedagogical approaches. The modern design studio rests on student-centered, transdisciplinary, and deep approaches to learning (Shreeve, Sims, and Trowler 2010, Crowther 2013) that could inform new designs for learning. However, it has been difficult for designers to communicate the type of knowledge learned in the design studio and how the pedagogical strategies support that knowledge. In our recent study, part of a Ph.D. project, we have explored new ways of conceptualising pedagogy in the design studio. To divert from teaching routines formed by a specific academic culture or tradition, we grounded our study in an epistemological understanding of design as the general human approach (Simon 1969) to create intentional change (Nelson and Stolterman 2012). We interviewed design teachers across different disciplines about their experiences of teaching in typical design studio assignments. Then, we conceptualised the findings by operationalising pragmatist approaches to knowledge (Dewey 1925) and processes of inquiry (Dewey 1938). The findings consist of a conceptual structure that proposes 7 learning purposes during a design process, divided into three distinctive phases.

We propose a workshop that uses those findings from our study to spark discussions on new designs for learning. For us, the workshop is also an opportunity to explore reactions to our findings in preparation for our next study.

## **Can inclusive participation be designed semiotically? A multimodal perspective on higher education teaching in Sweden and South Africa**

Anders Björkvall, Arlene Archer and Zach Simpson

Universities must respond to the need to widen participation, as explicitly formulated in Sustainable Development Goal 4.3: Equal access to technical/vocational and higher education. In this paper, our contention is that widening participation can be promoted by (re)designing the genres and practices of higher education for inclusion, and that such (re)designs have not yet been systematically analysed. The aim of the paper is to present the main ideas, arguments and ambitions underpinning the new research project Inclusive participation in higher education: A multimodal genre perspective from Sweden and South Africa (IpSSA), financed by the Swedish Research Council (2024-2027). More specifically, we argue that multimodal approaches to pedagogy and research offer unique potential for (re)designing more inclusive higher education. Multimodal approaches to pedagogy recognize that meanings are constructed in myriad ways, including language, but also image, music, drawing and various other modes. Multimodal pedagogies, therefore, can better leverage the visual, oral, digital as well as linguistic resources that students (and lecturers) bring with them into higher education.

Swedish higher education has been challenged with questions of how to support non-traditional, migrant and foreign-language students in the context of widening participation. Several official government reports have further highlighted this challenge, and research has addressed questions of inclusion of students with disabilities, migrants, and gender inclusion. There is thus opportunity for Swedish higher education to draw significant lessons from the South African higher education experience – but also vice versa. South African research on developing inclusive higher education has been world-leading and it has made significant strides. However, that research has not always translated into (re)design and transformation of higher education, and there still remain severe disparities in South African higher education. The paper will feature an overview of some of the work done in the South African contexts in this regard, and relate it to some of the Swedish research in this field.

## **Designing with and for digital pencils: On the potentials of writing and shaping by hand in digitalized middle schools and high schools**

Anders Björkvall, Fredrik Lindstrand and Ida Melander

This presentation reports on results from two studies of uses and potentials of digital pencils in grade 4 and 8 in Sweden. Digital pencils were provided to the students and their teachers and the teachers integrated the pencils in a number of projects. The didactic design of teaching and learning were performed by teachers and their students, without direct involvement by us as researchers.

The broader background to these studies is a dichotomization of the resources used for contemporary teaching, learning, and meaning making that is present in many schools today, but also in the public debate. In this discourse, a simplified division of learning tools prevail: they are either “digital” or “analogue”. Our presentation addresses this dichotomy, and understandings of semiotic technologies more broadly, by analyzing the potentials of the digital pencil for connecting “analogue” meaning making to “digital” meaning making in middle school and high school. We look at how writing and shaping by hand – still to be considered fundamental skills and competences in society today and with a history that goes back thousands of years – can be performed in digitalized Swedish classrooms.

Based on data from the two studies carried out in 2022 through 2024, our analysis provides knowledge of the semiotic potentials and actual uses of digital pencils in school, something which is lacking in previous research, with the exception of a few recent studies (Riche et al, 2017). The overall methodological framework is multimodal ethnography (Björkvall, 2012). This methodology combines tools and techniques from ethnography with those from semiotics and designs for learning.

Two main results stand out. First, the digital pencils can actually be effectively used to draw on analogue practices in the classroom. We will provide examples. Second, the digital pencils have other affordances (Lindstrand, 2022) than just functioning as “digital ink”: they are multifunctional in the sense that they can be used as tools for an array of tasks that analogue pencils cannot. Thus, the analysis concludes that not only can the digital pencils be used to resemiotize analogue practices; they also afford new ways of writing and shaping by hand. These latter need to be further integrated in the didactic practices of Swedish classrooms.

Björkvall, A. (2012). Artefaktens betydelsepotentialer: En presentation av den sociosemiotiska etnografen som teori och metod. In: Hestbæk Andersen & Boeriis, Nordisk socialsemiotik: Pædagogiske, multimodale og sprogvidenskabelige landvindinger, 59–88. Odense: Syddansk Universitetsforlag.

Lindstrand, F. (2022). A semiotic and design oriented approach to affordances, in Björklund Boistrup & Selander, *Designs for Research, Teaching and Learning. A Framework for Future Education*. London: Routledge.

Riche, Y. et al (2017). As We May Ink? Paper presented at the Proceedings of the 2017 CHI Conference on Human Factors in Computing Systems.

## **Active Learning through Reflective Writing in Social Work Education.**

Jonas Christensen and Anna Wärnsby

This qualitative study explores student learning progression through reflective writing on an international university course in social work. The study also illuminates an example of classroom design that stimulates active learning through the course activities and examination forms. Supporting students' own understanding of their profession is central to this course design. The study is based on the content analysis of three sets of data: student reflective writing, instructor formative feedback on this writing, and student end-of-course reflections. Our findings demonstrate that structured, scaffolded reflection and continuous formative feedback stimulated learning progression, increased awareness of one's own learning strategies, and supported the adoption of an explorative, reflective stance in students. Therefore, the experimental course design with several reflective tasks created the sought-after intersection of the academic and professional literacies. Moreover, this design stimulated student engagement and resulted in high attendance. This design is particularly suitable in heterogeneous classrooms and promotes student inclusion and active learning. In other words, students who participate in a classroom designed for active learning both develop their academic literacy skills and deepen their professional skills.

Balgopal, M. M., & Montplaisir, L. M. (2011). Meaning making: What reflective essays reveal about biology students' conceptions about natural selection. *Instructional Science: An International Journal of the Learning Sciences*, 39(2), 137–169. <https://doi.org/10.1007/s11251-009-9120-y>

Bronfenbrenner, U. (1979). *The ecology of human development*. Harvard University Press.

Christensen, J., & Wärnsby, A. (2023). Reflective Writing in Course Design for Active Learning in Social Work Education. *Journal of Social Work Education*, 59(3), 756–771. <https://doi.org/10.1080/10437797.2023.2213285>

Fink, L. D. (2003). *Creating significant learning experiences: An integrated approach to designing college courses*. Jossey-Bass.

Rai, L., & Lillis, T. (2013). “Getting it write” in social work: Exploring the value of writing in academia to writing for professional practice. *Teaching in Higher Education*, 18(4), 352–364. <https://doi.org/10.1080/13562517.2012.719157>

## **Objects, improvisation, and interactional competence: Staging improvised language games with props in language learning in-the-wild**

Brendon Clark, Magda Vanmontfort, Lin Wang, Anjuli Tushar Acharya and Nastasia Fomina

In this paper we present our current Research Through Design (RtD) program and experiments where we use the theory and practice of Language learning in-the-wild (L2W), with its ideal of looking at face-to-face interaction in the target language in everyday environments as the core context of language learning, to explore codesign questions within the encounters between newcomers to a country and those residing in the country. Placing the dynamic in-the-wild encounter at the core brings focus to three specific roles, the encounter between (1) the learner with the intention of learning the language, and (2) the person/people local to the environment (store clerk, dental receptionist), and (3) the person/people/organization/materials supporting the learner to embrace the approach (teachers, classroom-based tasks).

Project: Working within the constraints of language training organizations and their curriculum for adult newcomers to Belgium learning the local Dutch, we are reporting on explorations with teachers from three Belgium based education organizations of how to both introduce the value of L2W activities and find practical methods for language teachers to support students outside the classroom. We embrace a design anthropological approach that combines learning-by-doing activities of Participatory Design from the Scandinavian tradition, improvisational theater techniques, and visualization of processes. During their explorations, we embrace the motto 'practice what you teach' offering teachers opportunities to explore the in-the-wild learning environment as a rich resource for staging interactions that correspond with the learner's experiences and knowledge of the social world.

We are exploring two main codesign questions:

- (1) How can we introduce improvisational techniques for managing in-the-wild interaction?
- (2) How can the teacher-mediated classroom setting be transformed into a rehearsal space for improving the interactional competence of the learner in specific targeted in-the-wild encounters?
- (3) How can the creative use of objects be used to manage the interaction for the learner to initiate, facilitate and end in-the-wild interactions?

Clark, B., Wagner, J., Lindemalm, K., & Bendt, O. (2011, April 18). Språkskap: Supporting Second Language Learning "In The Wild." Språkskap: Supporting Second Language Learning "In The Wild". INCLUDE11.

Clark, B., & B. Torretta, N. (2018). Co-creating language learning journeys: A designerly approach to supporting experiential language learning practices: A resource for teachers and teacher educators. Universitat Autònoma de Barcelona.

Eskildsen, S. W., & Theodórsdóttir, G. (2017). Constructing L2 Learning Spaces: Ways to Achieve Learning Inside and Outside the Classroom. *Applied Linguistics*, 38(2), 143–164.

Lilja, N., Piirainen-Marsh, A., Clark, B., & Torretta, N. B. (2019). The Rally Course: Learners as Co-designers of Out-of-Classroom Language Learning Tasks. In J. Hellermann, S. W. Eskildsen, S. Pekarek Doehler, & A. Piirainen-Marsh (Eds.), *Conversation Analytic Research on Learning-in-Action* (Vol. 38, pp. 219–248). Springer International Publishing.

Norman, R. (2014). *Improvising Now*. CreateSpace Independent Publishing Platform.

Wagner, J. (2015). Designing for language learning in the wild: Creating social infrastructures for second language learning. *Usage-Based Perspectives on Second Language Learning*, 75–102.

Wagner, J. (2015). Designing for language learning in the wild: Creating social infrastructures for second language learning. *Usage-Based Perspectives on Second Language Learning*, 75–102.

## **The East meets West research project: Insights about collaboration in design for learning-based initiatives**

George Cremona

In this presentation I intend to share insights from the ongoing East meets West research project (EDU, 2023). This East meets West initiative is a continuous collaboration between the University of Malta and a University in Bataan in the Philippines. Since its beginning in 2021, this research project has aimed to implement design for learning-based principles (Forsling, 2022) specifically socio-constructivist ones. These very often put students and their abilities at the centre (Benford, 2023) also investigating whether the educators of two very different socio-culturally diverse learning contexts, through collaboration, can support each other pedagogically and somehow work together on the design of multimodal pedagogical resources (based on Kress, 2010 and Jewitt, 2013) aimed to be used in primary and secondary schools in both contexts.

The presentation will initially share a brief outline manifesting the classroom-based initiatives organized by the two collaborating institutions throughout the three years since the beginning of the project. While doing this, special attention will also be given to the design for learning principles adopted in each stage of the project.

After setting this context, through a qualitative thematic analysis (Creswell, 2013) of a set of data collected from participants' (i.e. student and teacher) feedback, the findings will show how notwithstanding the very different and culturally diverse realities and mentalities, through the adopted design for learning initiatives, both educational institutions manage to find common grounds.

As a main conclusion, the outcomes indicate that these design for learning initiatives manage to bring each side at par with the other and instead of having one side judging the other, both sides adopt Freirean concepts (Freire, 2020) and manage to understand each other's reality and find what works for both sides.

A highlight will be presented towards the end of the presentation. Through a short video clip, the head of the Filipino University will also share with the audience 5 insights learned by both sides throughout the project. These may hopefully serve as invaluable practical tips for others who eventually plan to initiate similar collaborations based on design for learning principles.

Benford, M. (2023). A Look at Diversity Through the Lens of Universal Design for Learning and Differentiated Instruction to Better Educate Learners. *The Journal of the Research Association of Minority Professors*, 25(2). Retrieved from <https://digitalcommons.pvamu.edu/jramp/vol25/iss2/1>

Creswell, J. W. (2013). *Qualitative Inquiry & Research Design: Choosing among Five Approaches* (3rd ed.). Thousand Oaks, CA: SAGE.

EDU, (2023) East meets West Symposium. Edu.mt. Retrieved from: <https://newsbreak.edu.mt/2023/05/26/east-meets-west-symposium/>

Forsling, K. (2019). Design for Learning: Focus on Special Needs. *Design for Learning*, 11(1), 108–117. <https://doi.org/10.16993/dfl.106>

Freire, P., 1921-1997. (2000). *Pedagogy of the oppressed*. New York :Continuum,

Jewitt, C. (Ed.). (2011). *The Routledge handbook of multimodal analysis*. Routledge/Taylor & Francis Group.

## **Embodied interaction of students with multisensory technologies as designs of learning: The case of the 'weDRAW' project**

Sophia Diamantopoulou and Sara Price

This paper discusses the gesture and movement of primary school students playing a KINECT- based educational maths game about angles. Through two video excerpts featuring pairs of students playing the game as well as interviews with a researcher exploring their understanding of angles before and after the game experience, the paper asks questions such as: 'What is being embodied, mediated and re-mediated through the students' movement and gesture?' and 'To what extent is movement a sign and design of learning?'

The data presented in this paper are part of the EU Horizon project 'weDRAW: Exploiting the best sensory modality for learning arithmetic and geometry at primary school', with the UCL strand of this led by Professor Sara Price.

Key theoretical underpinnings of this study are embodied and enactive approaches to learning (Price & Duffy, 2018, Lindgren & Price, 2018) along with multimodal perspectives in the study of movement as a sign and design of learning (Diamantopoulou & Christidou, 2016) anchored on the work of Selander and Kress.

Through a multimodal social semiotic analysis of the students' talk, movement and gaze the paper looks at the interactive nexus of resources that shape students' understanding of angles, attributing significance to signs arising in their bodies. It explores how students' bodies mediate signs of learning while they interact with the educational framing of the teacher and/or the particular affordances of KINECT; two educational resources which materialize different understandings of what an angle is and thus prompting different possibilities for an embodied dialogue.

The paper argues that students' multimodal ensembles of movement and gesture are agentic designs of their learning arising in response to prompts offered by the designs for learning mediated by the KINECT game and the researcher. These are constantly transformed and negotiated as the students reshape their understanding of angles throughout the learning episodes framed, realising various embodiments of this maths concept.

Diamantopoulou, S. (forthcoming). Instantiations of agency in students' multimodal texts: Endorsing or defying the pedagogic discourse as a political and social achievement. In Starc, S & Komninou (eds) *Multimodal Texts in Schools*. Peter Lang.

Diamantopoulou, S. (2023, November 16-17). A multimodal interdisciplinary engagement with Kress's social semiotic concept of agency. Paper at 5th International Webinar on Multimodal Discourse Analysis. Jaume I Universitat, Spain.

Diamantopoulou, S., & Christidou, D. (2016). The Choreography of the Museum Experience: Visitors' Designs for Learning. *The International Journal of Arts Education*, 11(3), 1-13. DOI:10.18848/2326-9944/CGP/v11i03

Lindgren, R., & Price, S. (2018). Embodiment and technology-enhanced learning environments: Cultivating a new community of design research. In J. Leigh (Ed.) *Conversations on Embodiment across Higher Education* (pp. 173-189), London: Routledge.

Price, S.J., & Duffy, S. (2018). Opportunities and Challenges of Bodily Interaction for Geometry Learning to Inform Technology Design. *Multimodal Technologies and Interaction*, 2(3), 41;

Thomas Jha, R., & Price, S. (2022) *Embodying science: the role of the body in supporting young children's meaning making*. *International Journal of Science Education*

## **The concept of design in the field of Multimodal English Language learning: Recognizing re-distributed agency in semiotic work**

Sophia Diamantopoulou and Sigrid Ørevik

The concept of design has been central in Selander's and Kress's scholarly work on designs for learning (Kress, 2010; Selander & Kress, 2017). Bringing together Selander's sociocultural approach to pedagogy and Kress's theory of communication as 'equitable participation in the shaping of the social and semiotic world' (Kress, 2010, p. 6), this concept pertinently accounts for students' and teachers' agentic engagement in English education.

This paper outlines the relevance of design to the field of Multimodal English Language learning (MELL) which emerges at the intersection of social semiotic and/or SF-MDA multimodality, and English as first or additional language learning. Discussing design as a key concept for MELL, in line with Selander's (2022) theorization of design for this field, the paper views design as semiotic work happening across and beyond institutional boundaries and within the meaning makers' own text worlds. Such instances of semiotic work now include video gaming and participating in social media, creating digital texts with technologies in hybrid spaces between home and school, and text making assisted by Artificial Intelligence (AI).

The starting point for this discussion is our understanding of the tenets of MELL (Diamantopoulou & Ørevik, forthcoming) as resonating with key underpinnings in designs for learning theory. Our argument for enhancing and expanding the notion of design – beyond that of pedagogical designs for learning, or students' designs in/ for learning within the educational contexts of English - requires a new foregrounding of the agency of all parties involved in semiotic work in MELL. Building on Bezemer and Kress's (2016) idea of agency as distributed between the rhetor/designer and those interpreting a design, we argue for a renewed attention to agency, as the rhetorical positioning of meaning makers towards institutional settings (Diamantopoulou, forthcoming), and as 're-distributed' among meaning makers in the context of MELL. This discussion emerges as an imperative, particularly in the light of Generative AI which has radically unsettled the relative stability of what text making entails. In this endeavour of connecting agency to design more closely, we consider newly emerged understandings of design (e.g. Cope and Kalantzis, forthcoming).

Thus, the purpose of this paper is to propose a continuous reviewing of the concept of design in the light of the constantly changing social worlds. Refreshing our perspective on design and rethinking its relevance for MELL entails a renewed attention to all designs arising within and beyond the institutional boundaries of English learning. The paper finally considers the implications for the recognition of design as agentic semiotic work within institutional framings of English language education.

Bezemer, J. & Kress, G. (2016). *Multimodality, learning and communication: A social semiotic frame*. Routledge.

Cope, B. & Kalantzis, M. (forthcoming). *Literacy in the Time of Artificial Intelligence*. [publication]

Diamantopoulou, S. (forthcoming). Student agency in the creation of multimodal texts at the Ancient Agora of Athens: A political project. In Starc, S. and Komninos, N. (eds) *Case Studies in Multimodal Texts in Schools*. Peter Lang.

Diamantopoulou, S. & Ørevik, S. (forthcoming). *Multimodality and English language learning (MELL)*. Wiley Encyclopedia of Applied Linguistics.

Kress, G. (2010). *Multimodality: A social semiotic approach to contemporary communication*. Routledge.

Selander, S. (2022). A design-theoretic and multimodal approach to language teaching and learning. In S. Diamantopoulou & S. Ørevik (Eds.), *Multimodality in English Language Learning*. Routledge.

Selander, S. & Kress, G. (2017). *Design för Lärande - ett multimodalt perspektiv*. Lund Studentlitteratur.



## An interpretation model for representations

Anneli Dyrvold and Judy Ribeck Nyström

A complexity when reading subject specific texts is that many words, symbols and images bear meanings that are dependent on context. The mixture of subject-specific and everyday language in texts has been described in other models. While working with an empirical study on mathematics subject language (Ribeck Nyström & Dyrvold 2019), we realised that the importance of contextual interpretation of representations was insufficiently described in the existing models. In a subject as mathematics many words and symbols can be used both in an everyday and a mathematical sense (e.g. factor, divide, ! and ' ). This existence of homonymous and polysemous representations and potential demands they put on a reader is well known for vocabulary (e.g. Nation 2001; Nerlich 2003) but less explored for the symbolic language.

Learning a new subject means that new, specialised words and often also symbols are introduced. Furthermore, and more challenging, many words and symbols already familiar from everyday language or from another subject, are used in new senses, something that needs to be learnt. To teach about specialised representational forms is a common practice in schools, but less focus is laid on the discernments needed regarding ambiguous representations (Gibbons 2013).

For example, an exclamation mark can in one case stand for factorial and in another case indicate an imperative, sometimes even in the same sentence. Thus, ambiguous representations need to be correctly interpreted in order for the communication to work. While analysing mathematics language, this ambiguity was something we had to handle, and, more specifically, we needed a structured description of the discernments someone interpreting subject language must make. We therefore developed the Interpretation model for representations, which highlights the complexity of different senses (e.g. technical and everyday) in the same text and puts potential ambiguities in the foreground.

The model was developed in an iterative manner, initially based on existing knowledge about language (e.g. Schleppegrell 2004, Shanahan & Shanahan 2012, Hajer & Meestringa 2014), and thereafter adjusted to also capture the interpretation process for different subject languages, using mathematics as our particular case. Furthermore, a categorisation scheme representing the model was designed to communicate exactly what was needed and only that. Our intention is that the interpretation model and corresponding scheme shall be useful in teaching, in discussions about language use and to highlight characteristics of a particular subject language.

Gibbons, P. (2013). *Stärk språket, stärk lärandet: språk- och kunskapsutvecklande arbetssätt för och med andraspråkselever i klassrummet*. 3. uppl. Hallgren & Fallgren.

Hajer, M. & Meestringa, T. (2014). *Språkinriktad undervisning, en handbok*. Hallgren & Fallgren.

Nation, P. (2001). *Learning vocabulary in another language*. Cambridge University Press.

Nerlich, B. (2003). *Polysemy: flexible patterns of meaning in mind and language* (1st ed.). Mouton de Gruyter. <https://doi.org/10.1515/9783110895698>

Ribeck Nyström, J. & Dyrvold, A. (2019). Subject language in mathematics textbooks. Verbal text fragments supplemented by other semiotic resources. Paper presented at ECER 2019, Hamburg, September 2-6. <https://eera-ecer.de/ecer-2019-hamburg/>

Schleppegrell, M. (2004). *The language of schooling. A functional linguistics perspective*. Lawrence Erlbaum Associates, publishers.

Shanahan, T. & Shanahan, C. (2012). What is disciplinary literacy and why does it matter? *Topics in Language Disorders* 32(1), 7–18. DOI: 10.1097/TLD.0b013e318244557a

## Designing an expressive and creative digital culture by coding in language one

Marie Falckesgaard Slot and Rasmus Fink Lorentzen

In a project related to the Danish Knowledge Center for Technology comprehension, we develop intervention-based designs in language one (Danish) related to social semiotic theoretical approaches combined with a focus on “computational literacy”. The purpose is to develop learning designs that challenges how an expressive and creative digital culture can enable participation and empowerment for students in secondary school and high school.

Our point of departure is an integrated approach among practitioners to facilitate multimodal production, remediation and creative production (Kress, 2010, Selander & Kress, 2012).

Inspired by the American physicist Andrea DiSessa, we define computational literacy (CL) as a social and intellectual importances of a culture or civilization characterized and mediated by material, cognitive and social matters. These dimensions of CL are not new, but it is new to combine computational approaches with the ‘social semiotic’ approach to first language teaching and research, which traditionally have a strong focus on reading and writing (Mills, 2015). In our project we combine basis concepts (digital creativity, multimodality) with material intelligence and coding (Disessa, 2001, Chongtay, 2018). We thus create a new framework for designing principles for interventions on computational literacy in Language one. The presentation is guided by the following research question:

Which design principles on coding can guide multimodal interventions as a foundation for digital creativity in language one in a K12 perspective?

Grounded on a review that investigated connections between computational literacy and language one in the Nordic countries and international, we came up with two results: 1) a strong STEM-landscape focused on how to facilitate computational literacy in STEM-subjects 2) a complete lack of knowledge on computational literacy in humanities, which does not contribute to student’s expressive digital culture. Thus, the task must be to bridge the gap in designing interventions between language one, focusing on communication, media and multimodality, and the digital creativity, focusing on e.g. coding.

In our presentation, we discuss the background for our scoping review and the decisions to work design based I K12. This includes examples of designs, which merges social semiotics and computation literacy in language one as a subject matter.

Chongtay R. (2018). Computational Literacy skill set - an incremental approach in Designing for learning in a networked world. Ed. Nina Bonderup Dohn. Routledge

DiSessa, A. A. (2001). Changing minds: Computers, learning, and literacy. Mit Press.

Kress, G.R. (2010). Multimodality: a social semiotic approach to contemporary communication. London: Routledge.

Mills, K. A. (2015). Literacy Theories for the Digital Age: Social, Critical, Multimodal, Spatial, Material and Sensory Lenses. Multilingual Matters.

Sharin R. Jacob & Mark Warschauer (2018) Computational Thinking and Literacy. Journal of Computer Science Integration. <https://doi.org/10.21832/9781783094639>

Selander, S., & Kress, G. (2012). Læringsdesign—I et multimodalt perspektiv. Frydenlund.

## **Designing Prospective Professional Identities across Semiotic Modes**

Sabrina Francesconi

This presentation draws on a task offered within a Business English course at the University of Trento. Students have been asked to record a video curriculum (henceforth VC), a concise audio-visual message that may be used by job-seekers to accompany a written curriculum for a prospective recruiter, at the earliest screening stage, or for a permanent self-presentation on their LinkedIn profile (Waung, Hymes, Beatty, 2014; Hiemstra, Derous, 2015). In order to design their VC, students have been offered linguistic and multimodal tools during their lectures, as well as business cues within a seminar by the university Job Guidance staff. It has been clarified that, if the traditional CV focuses on the present profile of the candidate in terms of qualifications and skills, the VC foregrounds the applicant's aims for a future job.

The concept of design will be adopted to explore how modes have been selected and combined (Kress 2010; Kress, van Leeuwen, 2001; Kress, van Leeuwen, 2006) into a small corpus of 16 audio-visual texts. For the discussion, the frame encompassing the ideational, interpersonal, and textual metafunctions will be used (Halliday, 1978; Halliday, Hasan, 1985). Concerned with what students as job applicants tell or show about themselves, the ideational metafunction is realised via speech, accessories, gestures, among other modes. The interpersonal metafunction is focused on social relations established between applicant and prospective recruiter via semiotic systems such as eye contact, size-of-frame or perspective. Involved in textual construction in terms of cohesion and coherence, the textual metafunction regards both intra-textual consistency among modes, and extra-textual consistency between the VC and the job position.

In light of a prospective and transformative view upon design (Adami, Diamantopoulou, Lim, 2022; Kress, 2000, 2010), attention will be given to the way students select and combine semiotic resources to engage with their potential recruiter and to shape their future professional identity.

## **In Tandem with technology: Literacy and Learning from Gutenberg to GPT**

Øystein Gilje

Designing learning with technology has been key to the evolutionary progress of human mankind for centuries. However, the technology involved has transformed the ways we read, write and learn (Olson, 1996; Ong & Hartley, 2012; Vallejo, 2022).

Using Vygotsky's genetic analysis of the social formation of mind as a point of departure (Gilje, 2011; Wertsch, 1985), this presentation pays attention to three periods of 66 years from the invention of the printing press to the launch of ChatGPT (1453-1519, 1833 – 1899 and 1956-2022).

Three shifts are investigated throughout these centuries: the use of the printing press for communication, reform, and enlightenment, the use of photography and moving images for documenting and understanding the world, and the development of AI to transform the world into readable data with expert systems and generative AI.

As an ongoing book project, the presentation gives the audience a brief overview of human development and learning during periods of technological advancements and transforming paradigms in literacy and learning. The investigation draws upon social semiotic perspectives (Kress, 2003; Selander & Kress, 2010) and understanding human learning and literacy from a socio-cultural perspective (Scribner & Cole, 1981).

## **Three perspectives on Co-Design in Innovation Projects: A workshop on Collaborative Workshops**

Øystein Gilje, Thea K. Vikebø, Åslaug Gjerpe Huseby, Henriette Ibsen, Marthe Fallang and Eli Tronsmo

Design-based research is a common method used in innovation projects and includes both research and (innovative) development. The purpose is to contribute with value beyond the specific research domain. The program Innovation projects in the public sector, funded by the Norwegian Research Council, have funded a few educational projects over the last decade, focusing on research, value for the actual municipality and resources for the national context (teachers and school leaders) (Norwegian Research Council, 2024).

This workshop gathers teachers, school-owner (Bærum Municipality), and researchers (the University of Oslo) in a joint event to discuss three diverse perspectives on the experiences from the five-year-long project Multimodality and Assessment in Digital Schools (MuLVu, 2019-2024, a project with three phases). Besides (1) including both research and innovative development, DBR focuses on (2) collaboration between different forms of expertise, (3) over several phases in the project in (4) cyclical explorations and trials, where data collection and data analysis take place alternately (Bakker, A., & Van Eerde, D., 2015; Tronsmo, in preparation). Collaboration is, therefore, a key characteristic and decisive for success.

This workshop will present three perspectives on collaboration in the project's three phases, with a particular focus on phase two. Starting out with data from phase 2, the teachers, school owners, and researchers in the workshop will present their views before asking participants to identify and make critical comments on the tensions and challenges that emerged based on the diverse stakeholders' points of view.

## **Learning Design practices in the Nordic Universities**

Mikkel Godsk, Ola Knutsson and Kolbrún Friðriksdóttir

Learning Design (LD), here defined as a supported process of 'devising new practices, plans of activity, resources, and tools aimed at achieving particular educational aims in a given situation' (Mor & Craft, 2021, p. 86), is gaining global traction in higher education driven by its systematic approach to supporting educators in designing effective teaching practices for students' learning based on pedagogical theory and supported by design tools. While extensive research has been conducted, limited practice is shared across the Nordic universities, contradicting the core ambition of LD to promote sharing of effective learning designs. Thus, to support sharing of practice and knowledge, this paper investigates LD practices through a systematic literature review, systematic web searches, and interviews with notable practitioners. The research aim is to uncover: What LD practices exist at the Nordic universities?

In total, the literature review (N = 107), web searches (N = 46), and interviews (N = 11) identified 24 LD practices at 15 Nordic universities as of March 2024 and a total of 18 different design tools, of which three were design assessment tools. It also revealed diverse LD practices ranging from very open or do-it-yourself (DIY) approaches to comprehensive and/or more orchestrated practices.

The open approaches consist, for example, of educators' designs for learning being shared via a web-based archive for other educators to learn from or build upon these designs (e.g., design patterns at Stavanger and Stockholm Universities) or where useful pedagogical and didactic models are shared and explained on a website (e.g., Copenhagen Business School). At the University of Oslo, educators' design choices and feedback are supported using a dashboard about students' progression (Kaliisa et al., 2022). Other universities benefit from comprehensive collections of design tools to support educators' design thinking and/or integration of educational technologies such as using the Teaching Lab Design Kit, the SPLASH model, and "The Design Book for Online Learning" (Huhtanen, 2019) at Aalto University.

The more facilitated processes are typically workshops for educators on blended and online teaching based on various adoptions of the ABC LD (e.g., Karolinska Institutet), sometimes combined with other concepts such as the Balanced Design Planning (BDP) tool at the University of Oulu, as a masterclass for leaders on redesigning study programs at Kaunas University of Technology, or with a specific educational goal such as supporting student agency and creating learning spaces (University of Jyväskylä). Other universities, such as Aarhus University, utilise LD as the educational development methodology for their teacher professional development programme. At both Aalto and Helsinki universities, students are involved in the design processes using hackathons or as paid interns. Few of the identified LD practices involve tools for assessing the efficiency of the design interventions. This includes Aalto and Aarhus universities that have tool to support the educators' reflection on the balance between efforts, impacts, and sustainability of their designs (Huhtanen, 2019; Godsk, 2022).

Mor, Y., & Craft, B. (2012). Learning design: reflections upon the current landscape. *Research in learning technology*, 20.

## **Learning Design in Practice — A Hands-On Workshop Based on Nordic Best Practices**

Mikkel Godsk, Ola Knutsson and Kolbrún Friðriksdóttir

Learning Design is increasingly gaining ground in higher education as a method to support educators in developing and sharing their teaching based on pedagogical theory, with or without educational technology. However, very little is shared about these practices and how the design processes can be efficiently organised. Therefore, this workshop invites a sharing of experiences and know-how about Learning Design in practice in higher education.

The workshop is based on the work of mapping Learning Design practices at Nordic universities in the context of the Nordplus network "DLiNC" (<https://dlinc.dk>). So far, the network has identified a total of 24 practices at 15 different universities (with more to come). This workshop will provide a brief introduction to selected practices that have already been identified, and participants are invited to share their experiences and practices. Additionally, three selected methods from different practices will be showcased: ABC Learning Design and design patterns at Iceland and Stockholm Universities, and how Learning Design sustainability is addressed at Aarhus University. There will thus be ample opportunity to share one's own and learn from others' experiences with Learning Design and gain firsthand experience with selected, effective methods.

Agenda (3 hours including a break):

1. Introduction to the DLiNC network and overview of findings (15 min)
2. Assessment of Learning Design sustainability (45 min.)

Break

3. Designing for sustainable Learning Design using ABC and design patterns (1 hour)
4. Reflection and sharing of practices (30 min.)

## Digital materiality in exhibition design: affordances for meaning-making

Eva Insulander and Fredrik Lindstrand

Digitization has had a transformative impact on museum practices in recent years, including the work with exhibitions (cf. Arvanitis & Zuanni, 2021; Vermehren et al, 2021). Digital media make it possible for more people to take part in cultural heritage, by making available objects and remains of a sensitive nature that could not otherwise be shown publicly. It opens up new forms of communication that can make it possible for groups of visitors with different needs to learn about the past (Galani & Kidd, 2020; Kyriakou & Hermon, 2018). New questions can potentially be asked when cultural heritage is made digital.

The paper presents an ongoing research project on digital materialities in museum exhibitions. Focusing on materiality, the project seeks to understand the affordances for meaning-making of digital media in relation to the epistemological commitments of modes, media, and material expression (cf. Bezemer & Kress; Björkvall & Karlsson, 2011; Lindstrand, 2022). The paper includes data from a series of workshops at museums that are part of the Swedish National Maritime and Transport Museums; Vasa Museum, Vrak - museum of Wrecks, Naval Museum, and Maritime Museum. The workshops were guided by key theoretical underpinnings from multimodal social semiotics. Based on empirical research into a wide variety of cases, we aim to offer a meta-language for assessing digital materiality which can be used as a basis for scientific analyses, as well as a tool for cross-professional discussions and informed decision-making in exhibition design.

We claim that the digital makes objects available in a specific form and with a specific (simulated) materiality which adds discursive layers to the representations. It contributes to the possibility of adding shifts in how the visitor is positioned, as well as shifts in presentations. Aesthetical enhancement contributes to making the digital salient and a resource in the museum's meta-representation of self. The digital may also be used to express epistemic modality. It is a plastic material that is open and flexible. Depending on the modes it "mimics", it assumes corresponding properties and brings the equivalent possibilities, hindrances, and epistemological framing in communication. The project is funded by The Swedish National Heritage Board and will run for three years, 2023-2025.

Arvanitis, K. & Zuanni, C. (2021). Editorial: Digital (and) Materiality in Museums. *Museum & Society*, 19(2).

Bezemer, J. & Kress, G. (2016). *Multimodality, Learning and Communication. A social semiotic frame*. London: Routledge.

Björkvall, A. & Karlsson, A-M. (2011). The materiality of discourses and the semiotics of materials: A social perspective on the meaning potentials of written texts and furniture. *Semiotica* 187-1/4, 141-165.

Galani, A. & Kidd, J. (2020). Hybrid Material Encounters – Expanding the Continuum of Museum Materialities in the Wake of a Pandemic. *Museum & Society*. 18(3), 298-301.

Kyriakou, P. & Hermon, S. (2018). Can I touch this? Using Natural Interaction in a Museum Augmented Reality System. *Digital Applications in Archaeology and Cultural Heritage* 12.

Lindstrand, F. (2022). A semiotic and design-oriented approach to affordance. In Björklund-Boistrup, L. & Selander, S. (eds.). *Designs for research, teaching and learning. A framework for future education* (p. 33-47). London: Routledge.

Vermehren, A. I.; Clements, J.; Fossli, I & Bogomolov, J. (2021). The Use of Digital Solutions in Museums Today and in the Future. Conceptual considerations through the lens of the Norwegian Government's Museum Framework. *The Journal of Media Innovations*, 7:1, p. 52-62.

## **Transformative leadership for sustainability, diversity and digital exploration**

Susanne Kjällander, Eva Noren and Cecilia Caiman

Sustainability issues are highly current worldwide and urgently need to be addressed on all educational levels, also in principal's leadership. To up-date education to meet new conditions, principals must develop didactic models based on research, relating changed society; greater diversity, increased digitization, climate change challenges and sustainable development. Consequently, a transformative leadership is in demand (Håkansson, 2019). This study contributes with knowledge of what characterizes principals' leadership for sustainability, inclusion and digital competence by designing a leadership model.

The idea of leadership as good and principals' creating a workplace with democratic basic assumptions are highlighted (Alvesson & Spicer, 2014). Transformative change occurs when principals develop skills for change in terms of leadership as learning (Håkansson, 2019).

This project has a didactic-modelling-design (Tiberghien, 2000) where dialogues are centered. Principals' experiences meet scientific models, selected by the researchers. Parts of these models are extracted and merged with leadership characteristics. In 'principals-researchers-dialogues', aspects from models are transformed and a new model is developed – an empirical, theoretical endeavor. A 'didactic-modeling-procedure' was designed with questions like: How do 'principal-research-dialogues' support leadership for sustainable education?

Transformative leadership theory emphasizes on inclusion, equity, social justice, and excellence for the growth of all (Shields, 2020). A design theoretical perspective (Selander, 2008) is used to analyze and illustrate the multimodal (Kress, 2003) empirical material.

In the study Sustainable development and education, researchers and principals convened for dialogues. Researchers introduced leadership models derived from leadership research, culminating in collaborative development of didactic modeling (Wickman, et al, 2020).

Didactic models are grounded principles for design of teaching or analysis of the teaching course of actions and its outcome (Tiberghien, 2000). The principals used metaphors to explain their leadership. 51 metaphors are presented and analyzed, extracted from the transcriptions, thereafter mangled into the leadership model, by means of the "7 steps for digitalization change leadership" (Kanter, 1999), "foreground & background" (Skovsmose, 1994) and "6 leadership emphasizes" (Mogren, 2019) - a new leadership model is developed. Nine metaphors are used to illustrate the model: red thread, umbrella, sow seed, watering, flying, balls, land in, growing and linking together.

The principals-researcher-dialogues inspired the creation of several networks. Principals lead for sustainability according to the leadership model. They plan their activities, even their whole organization, aligned with the networks.

Alvesson & Spicer (2014). Critical perspectives on leadership.

Håkansson (2019). Leadership for learning in the preschool.

Kanter (1999). The enduring skills of change leaders.

Kress (2003). Before writing. Literacy in the new media age.

Mogren (2019). Guiding principles of transformative education for sustainable development in local school organisations.

Selander (2008). Designs for learning-A theoretical perspective.

Shields (2020). Transformative leadership.

Skovsmose (1994). Towards a critical mathematics education.

Tiberghien (1994). Modeling as a basis for analyzing learning situations.

Wickman, et al. (2020). Didactics and didactic models.

## **Contextual Considerations: Developing Immersive Virtual Reality Safety Training in Two Workplaces Through Design-Based Research**

Anu Lehikko

Immersive virtual reality (IVR) can provide a safe and engaging learning environment for occupational safety training. However, learning theories have been scarcely applied in IVR research (Radianti et al., 2020). No empirically tested models exist that could guide the practitioners in pedagogically viable application of IVR in their safety training program designs. To address this issue, a sociocultural simulation training model for IVR safety training was developed in design-based research (DBR) (Amiel & Reeves, 2008). Research literature from various disciplines such as simulation learning (Dieckmann, 2009; Gaba, 2004), workplace learning (Billett, 2021), and occupational safety training (Burke et al., 2006; Casey et al., 2021), was used as a foundation for the model. Social cognitive (Bandura, 1997), sociocultural (Vygotsky, 1978) and cognitivist (Sweller, 2020) views on learning were combined to achieve the pragmatic objectives. Two research organizations carried out a joint study in collaboration with two large work organizations in Finland. Empirical mixed-methods research was conducted with an emphasis on quantitative data that was analyzed with statistical methods. Qualitative data was collected before, during and after training interventions, and subjected to deductive and inductive content analysis methods. The aim of this presentation is to discuss the challenges and benefits of using the DBR methodology to develop a novel safety training method in a multidisciplinary context. The study forms the basis for the author's doctoral dissertation. The main research question for the dissertation study was, 'How should facilitated group learning situations and individual immersive virtual reality training scenarios be designed and combined in a training model to support the trainers and learners in achieving safety training objectives in the sociocultural setting of their workplace?'

## **The fragility of declarative knowledge: Trust and persuasion in human-robot interaction**

Ali Reza Majlesi, Gustav Lymer, Silvia Kuntiz, Catrin Norrby, Pablo Gonzalez Oliveras and Olov Engwall

This study investigates the impact of human-robot interaction on trust, knowledge display, and persuasion in solving a mathematical problem in an educational setting. Utilizing a combination of ethnomethodology and conversation analysis (Sacks, 1992), the research examines how upper-secondary students interact with a social robot programmed to initially convey correct mathematical solutions, then contesting the students to accept an erroneous solution. This experimental setup serves to explore the dynamics of trust conditions (Garfinkel, 1963) followed by its breach, designed to elicit a spectrum of student reactions—from steadfast adherence to prior knowledge, through confusion, to eventual acceptance of misinformation. The data reveal that a significant majority (16 out of 22) of the students eventually accept the robot's incorrect solution, underscoring the fragility of declarative knowledge to social influence in interactive contexts. This finding moreover highlights the nuances in the display of knowledge in interaction. The analysis further discusses how students negotiate these epistemic and trust-related challenges, contributing insights to the broader discourse on trust in, and the possible impact of persuasive practices of, artificial agents in educational environments.

Garfinkel, H. (1963). A conception of, and experiments with, 'trust' as a condition of stable concerted actions. In: O.J. Harvey (Ed.), *Motivation and Social Interaction*, (pp. 187–238). New York: Ronald Press.

Sacks, H. (1992). *Lectures on Conversation*. Vol. I & II. Malden, MA.: Blackwell Publishing.



## Vocational teacher's didactic design for simulated learning environments

Elisabet Malvebo

In this presentation I will introduce my planned doctoral project in higher education pedagogy, focusing on simulation-based teaching and learning (SBTL). SBTL is far from new in education. Educating and training to professions in complex and critical situations with real-life characteristics, at adjusted pace, without causing injury or material and financial high costs, and with gradual levels of complexity has been done for many years in tertiary education. Learners have through simulation-based teaching a chance to apply knowledge, to develop skills required and to “acquire high levels of expertise in complex problem-solving tasks” (Chernikova et al., 2020, p.500). The range of educational tools to use in SBTL is wide, from analogue to highly technical spaces, and thus both the range of authenticity and the influence on learning when combining these resources with activities and material, is vivacious. From a pedagogic perspective the field portrays itself as quite complex on behalf of the teacher as a designer of the learning environment. With development and growth in usage of technology and digital resources in higher education teaching and learning, new possibilities - and challenges - constantly arise (e.g. Leijon & Tieva, 2021).

The overall aim with the compilation thesis is to explore vocational teachers' perceptions of didactic design (Selander & Kress, 2017) for simulated learning environments. Research questions to guide this work are:

- How does didactic awareness among vocational teachers take shape when designing for the simulated learning environment?
- What affordances and limitations do vocational teachers perceive when designing for the simulated learning environment?

The starting point in this project is a designs for learning (DFL) approach, understood as an abductive process where work is done close to practice in which practitioners in education are being included already in the planning process (Åkerfeldt & Svärdemo Åberg, 2021). I will introduce and discuss the initial two sub-projects in the thesis:

1. Exploring pedagogical research of the simulated learning environment – a systematic-narrative hybrid literature meta-review (Darren, Ritesh, & Jo, 2023). Preliminary results will be presented.
2. Vocational teachers' perceptions of didactic choices in simulated learning environments – a Q-study. (Lundberg, Frascini, & Aliani, 2023)

Chernikova, O., Heitzmann, N., Stadler, M., Holzberger, D., Seidel, T., & Fischer, F. (2020). Simulation-Based Learning in Higher Education: A Meta-Analysis. *Review of Educational Research*, 90(4), 499-541. doi:10.3102/0034654320933544

Leijon, M. & Tieva, Å. (2021). *Framtidens lärandemiljöer. En forskningsbaserad översikt*. Report for Akademiska Hus, June 2021.

Lundberg, A., Frascini, N., & Aliani, R. (2023). What is subjectivity?: Scholarly perspectives on the elephant in the room. *Quality and quantity*, 57(5), 4509-4529. doi:10.1007/s11135-022-01565-9

Selander, S. & Kress, G. (2017). *Design för lärande – ett multimodalt perspektiv*. Studentlitteratur: Lund.

Turnbull, D., Chugh, R., & Luck, J. (2023). Systematic-narrative hybrid literature review: A strategy for integrating a concise methodology into a manuscript. *Social Sciences and Humanities Open*, 7(1). doi:10.1016/j.ssaho.2022.100381

Åkerfeldt, A., & Svärdemo Åberg, E. (2021). Designs for Learning: A Research Approach. *International Journal of Educational Methodology*, 7(4), 547-555. doi:10.12973/ijem.7.4.547

## **Design and investigation of adaptive interactive learning environments for developing pupils' systems thinking skills**

Mina Mani, Måns Gezelius, Jonas Löwgren, Gunnar Höst, Marta Koć-Januchta, Lena Tibell and Konrad Schönborn

Facing environmental challenges like climate change and environmental degradation has increased the importance of acquiring systems thinking skills. Systems thinking skills can empower students and citizens to understand the interconnectedness of the earth's subsystems and make informed decisions (Assaraf & Orion, 2010). Developing these skills is a challenge that could potentially be scaffolded by well-designed interactive learning environments (Evagorou et al., 2009). Nevertheless, despite research on interactive learning environments in science education (e.g. Linn et al., 2014), little has been reported on the empirical process of designing such environments and integrating them into teaching practice. This research program fuses science education research with design practice and plans a multi-stage case study in formal learning contexts. It focuses on an adaptive interactive learning environment for developing grade 7-9 pupils' systems thinking skills in the carbon cycle context and is associated with three stages. Stage 1 is an explorative iterative design process that integrates multiple perspectives, including theoretical drivers, a design team, science teachers, and pupils. The process resulted in Tracing Carbon, an adaptive interactive visual learning environment with multiple learning tasks and quizzes in three modules. Stage 2 is currently investigating the influence of Tracing Carbon on the development of pupils' systems thinking skills in classrooms as a pre-/post-test design. Stage 3 is an ongoing process that aims to integrate the learning environment into classroom science teaching practice by employing a Design-Based Research method (Anderson & Shattuck, 2012). By involving two science teachers from different schools, stage 3 focuses on teacher-researcher co-creation of carbon cycle lesson plans. This stage aims to explore the influence of integrating the Tracing Carbon lesson plans on pupils' learning processes and emergent teaching approaches. The first stage of the case study has been completed, and the subsequent stages are in progress. Future work includes exploring the applicability of findings from formal learning contexts in informal learning contexts such as digital science centers.

Anderson, T., & Shattuck, J. (2012). Design-based research: A decade of progress in education research?. *Educational researcher*, 41(1), 16-25.

Assaraf, O. B. -Z., & Orion, N. (2010). System thinking skills at the elementary school level. *Journal of Research in Science Teaching*, 47(5), 540-563.

Evagorou, M., Korfiatis, K., Nicolaou, C., & Constantinou, C. (2009). An investigation of the potential of interactive simulations for developing system thinking skills in elementary school: A case study with fifth-graders and sixth-graders. *International Journal of Science Education*, 31(5), 655-674.

Linn, M. C., Gerard, L., Ryoo, K., McElhane, K., Liu, O. L., & Rafferty, A. N. (2014). Computer-guided inquiry to improve science learning. *Science*, 344(6180), 155-156.

## Designing a multimodal media literacy pathway for creative engagement

Ilaria Moschini, Maria Ranieri, Ilaria Bucciarelli and Giulia Cuzzo

In the presentation, we will illustrate and discuss the learning scenario “Exploring representations in the digital world: a multimodal media literacy pathway towards creative participation” (Moschini, Ranieri, Bucciarelli, 2023) designed by combining the concepts and tools of Media Education with those of Multimodality as part of the European project “ICME – Inclusive and Creative Media Education” (CREA-CROSS-2022- MEDIALITERACY, 2022-2024).

The ICME project aims at promoting innovative media literacy education activities to support the inclusion, creativity and participation of young people in society. The consortium comprises three European organizations: the Kansallinen Audiovisuaalinen Instituutti (KAVI), which is the leader and is located in Finland; the University of Florence (UNIFI), in Italy; and the Institute of Communication Studiesskopje (ICS), in North Macedonia. Each partner is responsible for developing a pilot operational model and contextualizing the others.

The learning objectives of the UNIFI model were selected from the Media and Intercultural Education Framework (or MIEF), a theoretical framework developed as part of the European project Media Education for Equity and Tolerance (or MEET) (Erasmus +, KA3, 2016-2018), aimed at promoting a critical and intercultural understanding of the role that media may play in supporting inclusion and social justice (Ranieri & Fabbro, 2018). The MIEF theoretical framework was also adapted to the premises of the psycho-pedagogical model of Universal Design for Learning (UDL) (CAST 2018). Leveraging UDL, the Framework MIEF supports learners’ development along three dimensions: “understanding”, “expression” and “engagement”. The source of inspiration for defining the levels of digital communicative competence in learners’ interpreting and designing media products was the Common Framework of Reference for Intercultural Digital Literacies (CRFiDIL) (Sindoni et al., 2019) developed within the European project EUMADE4LL (Erasmus +, KA2, 2016-2019). The framework builds on the conceptualization of learning as “recognition of agency” (Kress & Selander, 2012), and its descriptors consider the resources afforded in digital environments in relation to their meaning-making potential for successful communication in intercultural contexts.

The operational model was implemented from April to May 2023 within the “Multimodal Discourse Analysis” course at the School of Political Science “Cesare Alfieri” of the University of Florence (Italy). During the implementation, data were collected to evaluate the effectiveness of the learning scenario through students’ and educators’ pre- and post-surveys, as well as “in itinere” (that is, in progress) logbooks that guided the observation of the activities by the researchers involved in the ICME project.

CAST (2018). Universal design for learning guidelines (version 2.2). <http://udlguidelines.cast.org>

Kress, G. & Selander, S. (2012). Multimodal design, learning and cultures of recognition. *The Internet and Higher Education*, 15(4), 265–268.

Moschini, I., Ranieri, M. & Bucciarelli, I. (2023). Exploring representations in the digital world: A multimodal media literacy pathway towards creative participation. DOI: 10.57596/2-15-09-2023, [https://icmeproject.eu/wp-content/uploads/2023/09/Final\\_EN\\_UNIFI\\_PILOT\\_Creativity.pdf](https://icmeproject.eu/wp-content/uploads/2023/09/Final_EN_UNIFI_PILOT_Creativity.pdf)

Ranieri, M. & Fabbro, F. (2018). Designing media literacy education for intercultural contexts. The MIEF framework and guidelines. *INTED2018 Proceedings. IATED*, 6002–6008. <https://dx.doi.org/10.21125/inted.2018.1422>

Sindoni, M. G., Adami, E., Karatza, S., Marenzi, I., Moschini, I., Petroni, S., Rocca, M. (2019). The Common framework of reference for intercultural digital literacies. DOI: 10.13140/RG.2.2.20064.43520

## **Visual Reading of Literary Texts: Exploring a cross-modal approach in the literature classroom**

Rumiko Oyama

This research started with a question that came out of the EFL literature classroom in Japan: What it means for the students to read stories written in English; What happens in the process of their reading; What understanding the target texts means in the pedagogical context and what can be done to improve reading literary texts. The status of the author in relation to the reader was re-assessed in Barthes (1977) while Iser (1978) focused specifically on the role of the readers through the dynamic of reading. "Reading" in the context of EFL literature classroom in Japan has been considered primarily as a matter of translating from English to Japanese, where students are encouraged to put what they read into Japanese and translation was used as one gauge of understanding the text. It has been observed that students do not have a full understanding of what they translated. There is no doubt that translation is one of the most established ways to read literature, but the process of translation, or reading is hardly focused. One proposition is that understanding of written narrative can be enhanced by involving another mode of communication: visual images, in other words, reading literary texts cross-modally. The paper first reconsiders the act of reading literary text in the EFL context and then demonstrates how visual reading can be introduced into literature classroom. What is focused is the way in which linearity of literary narrative is transformed into visual images as a creative meaning making act on the part of the reader. Furthermore, the paper draws attention to potentiality of visual reading in cross-cultural understanding of literary narrative. By modifying the analytical framework proposed by Kress and Van Leeuwen (2021), the paper attempts multimodal analysis of students' visualisation data, which provides notable findings regarding how culturally specific visual reading can be. It is proposed that this cross-modal approach to literary texts can motivate the students to look at the text from multiple perspectives. Some cases clearly show that visualisation of written narrative requires a different way of reading from when word-to-word translation is expected. It is worth noting that through a further analysis of visual semiosis can lead to a more profound reading. The issue to note is what lies between written words and visualisation and one hypothesis (work-in-progress) is that the reader's L1 would make a significant impact on what and how is visualised, which would result in somewhat different reading and understanding. The paper argues that visual reading can make the process of reading more visible by providing the reader with an additional (and often creative) channel of meaning making. It is hoped that exploring act of reading literary texts cross-modally therefore would benefit literature education.

Barthes, R. (1977) *Image-Music-Text*. London: Fontana.

Iser, W. (1978) *The Act of Reading*. Baltimore, MD: John Hopkins University Press.

Kress, G. (1996) *Before Writing: Rethinking Paths to Literacy*. London: Routledge.

Kress, G and Van Leeuwen, T. (2021) *Reading Images: The Grammar of Visual Design*. 3rd edition. London: Routledge.

## Designing for Digital Translanguaging in Education -Affordances for a multilingual norm?

Petra Petersen

The use of digital resources in educational settings is widespread in many parts of the world and in Sweden most children have access to digital resources in educational settings. At the same time, there is ongoing debate on how and if these resources should be used by young children, and in Swedish media coverage and political debate, discourse on the use of digital resources is often boiled down to a polarized dispute about screentime. On the other hand, OECD (2023) brings forth the important role early childhood care in addressing both possibilities and risks of using digital technologies. One possibility can be to use digital resources to improve the lack of possibilities for children to take part in multilingual activities in educational settings, which has been noted both internationally (Garcia, 2009; Canagarajah, 2011b) and in Swedish settings (Björk-Willén, Gruber & Puskás, 2013).

In this study, a multimodal analysis of digital resources that can be used to create translanguaging activities are combined with a re-analysis of multimodal focus group interviews with preschool teachers (Petersen, 2020). The focus groups were filmed at three occasions, with five participating preschool teachers who have experience of using digital resources to include children's mother tongues in preschool activities. A social semiotic, multimodal approach (Hodge & Kress, 1988; Selander & Kress, 2010) has been used together with the analytical concept of pedagogical translanguaging, inspired by sociolinguistics (Garcia, 2009).

Key results include that two kinds of possible affordances for digital translanguaging were illustrated in the analysis of the digital resources: Firstly, ready-made content in one or more languages, other than the majority languages, for example story-telling applications in many languages, which combine auditive modes in children's mother tongues, with pictorial and textual modes. Secondly, more open-ended digital resources, which can be used by children, teachers or parents to design their own auditive and pictorial content, by for example drawing and recording. These possible affordances were also exemplified by informants, in the focus group interviews. The use of digital resources to create everyday translanguaging activities, including the whole preschool group, sometimes with ready-made content and sometimes with content made by children, teachers or parents, were highlighted by the participants. Using digital resources' affordances to intertwine the children's mother tongues in ongoing activities and projects in the preschool environment is in this study understood as digital translanguaging. The teachers also experienced these activities as a way to extend the participation of multilingual children as well as parents in the preschool environment and by doing so addressing issues of status and identity connected to language. However, in relation to language status, the participants also reflected on the reluctance of some parents, towards their children taking part in multilingual activities. This was related to which language was included, and the participants discussed that some parents saw some languages as having higher status than others, as well as different understandings of a mono- vs. multilingual norm.

Björk-Willén, P., Gruber, S., & Puskás, T. (Eds.) (2013). *Nationell förskola med mångkulturellt uppdrag*. Stockholm: Liber.

Canagarajah, S. (2011). Translanguaging in the classroom: Emerging issues for research and pedagogy. *Applied Linguistics Review* 2, 1–27.

García, O. (2009). Education, multilingualism and translanguaging in the 21st century. In *Multilingual Education for Social Justice: Globalising the local*, (Ed.) A. Mohanty, M. Panda, R. Phillipson, & T. Skutnabb-Kangas. New Delhi: Orient Blackswan (former Orient Longman), pp. 128-145.

Hodge, B., & Kress, G. (1988). *Social semiotics*. Ithaca, N.Y.: Cornell University Press.

Ivarsson, J. (2010). Developing the construction sight: Architectural education and technological change. *Visual Communication*, 9(2), 171-191.

OECD (2023), *Empowering Young Children in the Digital Age, Starting Strong*. OECD Publishing, Paris, <https://doi.org/10.1787/50967622-en>

Petersen, P. (2020). *Delaktighet och digitala resurser: Barns multimodala uttryck för delaktighet i förskolan i flerspråkiga områden*. Diss. Stockholm. <http://urn.kb.se/resolve?urn=urn:nbn:se:su:diva-178558>

Selander, S., & Kress, G. (2010). *Design för lärande – ett multimodalt perspektiv*. Stockholm: Norstedts Akademiska Förlag.

## **A Transformative Approach to Assessments for Equity**

Robert Prince

School leaving and Higher Education admission assessments are often used in both summative and normative ways. That is, scores on these assessments are used to compare students to their peers and to choose one student over another. A normative approach rests on the educational myths that Kress (2007) describes: the homogeneity of the student population, the stability of disciplines, and the unidirectionality of the teacher-student relation. The emphasis is on identifying academic conventions and exploring how students might be taught to become proficient and developing materials on that basis.

What is required in the South African higher education teaching and learning context is the use of these assessments for transformation. Despite huge strides in physical access to higher education, achieving epistemological access remains a significant challenge for historically disadvantaged South African students. This is due to past inequities in education systems. Transformative assessments can have an impact on admissions, and curriculum development. They can also provide students with information and opportunities to prepare for higher education. In looking at the vastly varied assessment conditions within which our students write, I am interested in how the assessments rely on candidate's assumed cultural capital as well as economic and social standing. The study adopts a literacy/ies perspective on student access and success where 'literacies' are understood to be socially situated, multiple, and often contested. While school-leaving and higher education admission assessments are designed to be transformative in order to provide access to higher education (Prince, 2022), the assessments may in fact disadvantage those from lower socio-economic backgrounds, thus contributing to the inequities that it seeks to address.

A transformative approach is concerned with: a) taking equity considerations into account, b) locating academic conventions in relation to specific and contested traditions of knowledge making; c) eliciting the perspectives of writers (whether students or professionals) on the ways in which such conventions impinge on their meaning making; d) exploring alternative ways of meaning making in academia, not least by considering the resources that (student) writers bring to the academy as legitimate tools for meaning making; and f) allowing students the agency to determine the manner in which they wish to pursue their studies. This presentation then proposes how higher education admission and curricula could, using the information emanating from school-leaving and higher education admission assessments, be more responsive to what students bring with them.

## Graphical models for prompting story elements - Using Design for learning as a framework for a PhD project on early literacy teaching

Kim Ridell

Graphical models are commonly used by primary school teachers and pupils in early literacy teaching to represent different story elements of narrative text. Using Design for learning (DfL) (Björklund Boistrup & Selander, 2022; Selander & Kress, 2021) as a framework, this PhD project explores how such models 1) pertain to Swedish policy documents of early primary school teaching (Ridell & Walldén, 2023), 2) how teachers design and orchestrate teaching in a formal school setting (Ridell & Walldén, 2024), 3) how pupils potentially re-design the use of models in their writing processes (Ridell, 2024) and 4) which story elements, and through which means of written representation, are acknowledged by teachers as parts of a written story in a formal school setting of literacy teaching (Ridell & Walldén, in progress).

Various concepts from DfL have been employed in the process of studying these perspectives in different part-studies of the project. Using transcribed video and audio data from classroom activities and follow-up interviews with teachers and pupils along with continuous documentation of their produced texts and models, the social dimensions within key perspectives of Design for Learning are explored – design for learning (DD1), design in learning (DD2) and acknowledging signs of learning (DD3).

In the presentation, I share how this theoretical framework has shaped my research design and how the different perspectives have been incorporated in different substudies across the field of early literacy teaching, combined with other multimodal social semiotics (Kress & van Leeuwen, 2020) and educational sociological perspectives (Bernstein, 1990, 2000). I will show how the graphical design of a model can align or deviate from curriculum phrasings, how teachers' different orchestrations of a model shift the literacy focus of explicit teaching, how pupils re-design character dialogue in their narrative writing to realise suspense-building in their stories and how teachers use broad metaphorical meta-language, such as "descriptions" and "red thread" when assessing pupils' written stories and acknowledging verbal passages as representations of these story elements.

Bernstein, B. 1990. *The structuring of pedagogic discourse. Volume IV. Class, codes and control.* Routledge

Bernstein, B. (2000). *Pedagogy, symbolic control, and identity.* Rowman & Littlefield Publishers.

Björklund Boistrup, L., & Selander, S. (2022). *Designs for research, teaching and learning: A framework for future education.* Taylor & Francis.

Ridell, K. (2024). *Narrativt skrivande i årskurs 1: En fallstudie om elevers re-design av berättelseelement.* Acta Didactica Norden, 18(1). <https://doi.org/10.5617/adno.10783>

Ridell, K., & Walldén, R. (2023). *Graphical models for narrative texts: Reflecting and reshaping curriculum demands for Swedish primary school.* Linguistics and Education, 73, 101137.

<https://doi.org/10.1016/j.linged.2022.101137>

Ridell, K., & Walldén, R. (2024). *Prompting story elements in first grade: An intermodal approach for exploring two teachers' orchestrations.* Multimodality & Society, 4(1), 29-57. <https://doi.org/10.1177/26349795231205199>

Selander, S. & Kress, G.R. (2021). *Design för lärande: ett multimodalt perspektiv.* (Tredje upplagan). Studentlitteratur.

## **Bridging as design: Connecting civic education and sustainable development**

Ole Smørðal and Anja Amundrud

Climate change concern and engage youth in Norway, some of whom have a good understanding of and interest in politics, but express low confidence in their ability to directly influence political processes and decisions that can bring about transitions to a sustainable society. Youth report "participatory fatigue" and frustration over not knowing how their inputs are treated or assessed (Sønderskov et. al, 2023). Accordingly, youth rarely participate in formal democratic channels and seem to prefer informal, temporary, and action-oriented ways of expression (Solhaug, 2021).

The success of transitioning to a sustainable society hinges on broad participation and innovative forms of collaboration among local communities, municipalities, and voluntary organisations. Yet, the adoption of collaborative, collective processes remain limited (Røiseland, 2022), despite growing recognition of the need for governance to be more co-creative, with municipalities playing a key role in facilitating and catalysing change into a more sustainable society.

We will present S4U (co-creation through talk, scenarios, simulations, and games) which is a research and innovation project that employ Scandinavian design research traditions to think broadly about design for and in learning.

**Design in learning:** Grounded in a participatory methodology S4U will connect civic education in lower secondary classrooms with municipal planning practices and build a bridge as a means to engage students in co-creating local plans for their school neighbourhood. Workshops with teachers and planners are conducted to identify relevant planning cases, matters of concern for participants, how and why youth should contribute, and expected results form co-creation. The process aims to connect teachers, students, elected officials and municipal planners in interventions collaboratively designed to promote equity, discussions, and (re) imagination of desirable futures (Munthe-Kaas & Hoffmann, 2016).

**Design for learning:** The bridging between classroom practices and the planning practices is vital and challenging. We use experimental traditions that blend democratic design experiments (Binder et al., 2015) with social design experiments (Gutiérrez & Jurow, 2016). Through these experiments, we explore existing social and material connections to uncover new learning opportunities and insights that can inform our practices. The research is focussed on navigating the complexities of wicked problems by fostering a collaborative environment where participants can experiment, learn, and develop solutions together. Using bridging objects as a conceptual frame, S4U will experiment with a diverse set of resources for learning: deliberation (talk) over (re) imagined futures (scenarios), understanding the effects of climate mitigation actions (simulations), and enacting planning and political processes (gamification).

Binder, T. et al. (2015). Democratic design experiments: between parliament and laboratory, *CoDesign* 11(3-4).

Gutiérrez, K. D., & Jurow, S. (2016). Social design experiments: Toward equity by design, *Journal of the Learning Sciences* 25.

Munthe-Kaas, P. & Hoffmann, B. (2016). Democratic design experiments in urban planning, *CoDesign* 13(4).

Røiseland, A. (2022). Co-creating Democratic Legitimacy: Potentials and Pitfalls. *Administration & Society*, 54(8), 1493–1515.

Solhaug, T. (Red.). (2021). *Skolen i demokratiet. Demokratiet i skolen.* [The school in the democracy. The democracy in the school.] Oslo: Universitetsforlaget.

Sønderskov, M., Tortzen, A., & Higdem, U. (2023). A Rapid Feedback App: Possibilities and Pitfalls for Extended Democracy. *Scandinavian Journal of Public Administration*, 27(2), 39–56.



## **Meta-thinking Cubes for Designing with Technology: promoting collegial reflection and critical pedagogies in educational change**

Sylvana Sofkova Hashemi and Maria Spante)

Teacher Professional Development Technology-mediated teaching promotes learner-centred practices moving from a content-focused to an activity-based approach involving teachers to frame activities with greater flexibility and designing for learning that is context sensitive (Boistrup & Selander, 2022). Digitalization challenges the established ways of planning and performing instruction. What students should learn, how they should learn it, and why this content should be used with a particular method need to be addressed in the design for learning through questions concerning the technology to use, interactivity in physical and virtual spaces, and when and where to teach (Lund & Hauge, 2011). Teachers thus need to be able to associate the relationship between digital technology and students' learning with the choice of relevant resources based on the learning goals and processes on which they are designed (Boistrup & Selander, 2022). To create time and space for and develop sustainable educational designs in given conditions is a challenge. It costs too much effort and time if the educational awareness and understanding for the pedagogical and contextual factors and frames do not end up in place (Sofkova Hashemi & Spante, 2016).

This presentation outlines the validation process of Design Dice, a three-dimensional meta-thinking tool that aligns student-content-technology relationships within a cube-like model comprising six didactic dimensions: knowledge goals, abilities, time, space, resources, and added value (Sofkova Hashemi & Spante, 2016). The validation of the framework has been ongoing since 2016 including both single explorative meetings with practitioners, evaluation of teachers' existing educational designs and longitudinal iterative interventions in co-design projects with teachers (McKenny & Reeves, 2019). Primarily, the framework creates a valuable foundation for collegial discussion accessing the technological and pedagogical dimensions making the organizational and social frames visible for educators across varied settings. Furthermore, it sheds light on the implicit and complex aspects of designing for learning, promoting critical pedagogies that resonate with educational transformation (Fullan, 2007). The longitudinal studies further indicate enhancement in precision over time with teachers becoming better at communicating, specifying, and articulating their designs for learning and at the same time challenging teachers' pedagogical digital readiness (Sofkova Hashemi, 2023).

Boistrup, L. B., & Selander, S. (2022). *Designs for research, teaching and learning: A framework for future education*, Routledge.

Fullan, M. (2007). *The new meaning of educational change*, Teachers College Press.

Lund, A., & Hauge, T. E. (2011). Designs for teaching and learning in technology-rich learning environments. *Nordic Journal of Digital Literacy*, 6(4), 258–271.

McKenney, S., & Reeves, T.C. (2019). *Conducting Educational Design Research*. Routledge.

Sofkova Hashemi, S., & Spante, M. (2016). Den didaktiska designens betydelse: IT-didaktiska modeller och ramvillkor [The significance of didactic design: IT-didactic models and frames]. In *Kollaborativ undervisning i digital skolmiljö* (pp. 125–135), Gleerups.

Sofkova Hashemi, S. (2023) Adequate digital competence: Swedish teachers' digital readiness in subject-based curricula. In Willermark, S., Olofsson, A. D. & Lindberg, J. O. (Eds.), *Digitalization and Digital Competence in Educational Contexts: A Nordic Perspective from Policy to Practice*, (pp. 177-193), Routledge.

## **Designing for learning spaces with adaptive VR environments in multilingual study guidance: a bridge between students' first language and subject content**

Sylvana Sofkova Hashemi, Emma Edstrand and Jeanette Sjöberg

Virtual Reality (VR) is an example of a technology offering potentials for immersive and interactive learning allowing students to experience destinations and content in 3D format that goes beyond the classroom (Eisenlauer & Sosa, 2022). This raises the question of how to optimally organize learning activities with VR environments in instructional settings to support learning in meaningful ways. Based on a co-design project combining methods of action research (Elliott, 2020) and design-based research (McKenney & Reeves, 2019) this study has a particular interest in how teachers design for learning in adaptive VR environments to contribute to the development of students' conceptual knowledge in multilingual study guidance. Multilingual study guidance in students' first language is a support that exists in Swedish schools to enhance the development of students' learning in order to meet the knowledge requirements of the curriculum.

In this study, two teachers, three students, one VR-designer and three researchers were involved in iterative interventions of educational designs in real classroom situations. Framing teaching and learning as a matter of design for learning (Boistrup & Selander, 2022) combined with a meta-thinking framework supporting planning and evaluation of teaching designs in workshop-driven activities (Sofkova Hashemi & Spante, 2016), the participating teachers identified learning targets, how to teach, and how to organize each activity. The study builds on documentation of the participating teachers' teaching designs and re-designs, creation of subject-specific VR environments, interviews and recordings of teaching activities in the VR environments. The results of the designs for learning show teachers' diverse strategies for concept training, immersion, interaction and visualization of the subject content based on student-active participation. Realistic scenarios and 3D-models were used in bilingual interaction with objects to deepen students' conceptual understanding. Students were invited to interact with the content in the VR environment the teachers created by picking up objects and moving them around, but also by searching for 3D models themselves to add to the learning spaces. The results thus show that VR environments are not static, but rather promote flexible, multimodal and student-activeways to bridge between students' first language and the content of the subject area.

Boistrup, L. B., & Selander, S. (2022). *Designs for research, teaching and learning: A framework for future education*, Routledge.

Eisenlauer, V. & Sosa, D. (2022). Pedagogic Meaning-Making in Spherical Video-Based Virtual Reality – a Case Study from the EFL Classroom. *Designs for Learning*, 14 (1), 129–136.

Elliott, J. (2020). Principles and Methods for the conduct of Case Studies in School-based Educational Action Research. In Anderberg, E. (Ed.), *Skolnära forskningsmetoder* (pp. 111–141), Studentlitteratur.

McKenney, S., & Reeves, T.C. (2019). *Conducting Educational Design Research*, Routledge.

Sofkova Hashemi, S., & Spante, M. (2016). Den didaktiska designens betydelse: IT-didaktiska modeller och ramvillkor [The significance of didactic design: IT-didactic models and frames]. In *Kollaborativ undervisning i digital skolmiljö* (pp. 125–135), Gleerups.

## Visual representation and trust in help givers: Implications for design in first-aid education materials

Dusan Stamenkovic, Ielka van der Sluis and Janina Wildfeuer

Multimodal characteristics of first-aid instructional materials have been extensively investigated in several previous studies (e.g., Van der Sluis, Vergeer, & Redeker, 2018; Van der Sluis et al., 2022; Wildfeuer et al., 2023). Starting from these studies, in our investigation, we narrow the focus to the portrayal of help givers in pictorial instructions, aiming to uncover the attributes associated with these representations across various formats and ways of depicting (for instance, as drawings or photographs, in colour or monochrome, simple or detailed, having different sets of characters, etc.). Drawing from a corpus of 40 selected images collected within the PAT project (see Van der Sluis & Redeker, 2019), participants evaluated these depictions using contrasting adjectival traits, presented in pairs, as outlined by Peabody (1987). Our empirical findings yield several relevant insights, indicating that favourable perceptions are often correlated with specific visual features, including colouration, perspective, and the portrayed gender of the depicted help giver. We believe that these results could have significant implications for the design of future first-aid instructional materials, advocating for more deliberate and effective representations, which could enrich learning experiences and user engagement in health education. This could, in turn, improve design-related decisions and allow them to communicate crucial health information more efficiently and optimize situation comprehension within health-educational frameworks.

Peabody, D. (1987). Selecting representative trait adjectives. *Journal of Personality and Social Psychology*, 52(1), 59–71. <https://doi.org/10.1037/0022-3514.52.1.59>

Van der Sluis, I., & Redeker, G. (2019). The PAT annotation model for multimodal instructions. In *Proceedings of the 6th European and 9th Nordic Symposium on Multimodal Communication (MMSYM)*. Leuven, Belgium, 9–10 September 2019.

Van der Sluis, I., Matoušková, G., Niemeier, H., Popp, S., & Carstens, J. (2022). The clarity and correctness of visualized thrust actions: A description and insights from users and experts. *Visual Communication*. <https://doi.org/10.1177/14703572221135240>

Van der Sluis, I., Vergeer, R., & Redeker, G. (2018). Action categorisation in multimodal instructions. In J. Pustejovsky & I. van der Sluis (Eds.), *Proceedings of the 11th edition of the Language Resources and Evaluation Conference (LREC 2018): Proceedings of the 1st International Workshop on Annotation, Recognition and Evaluation of Actions (AREA 2018)*. Miyazaki, Japan.

Wildfeuer, J., van der Sluis, I., Redeker, G., & van der Velden, N. (2023). No laughing matter!? Analyzing the page layout of instruction comics. *Journal of Graphic Novels and Comics*, 14(2), 186–207. <https://doi.org/10.1080/21504857.2022.2053559>

## Multimodal designs of digital examination across three faculties in higher education

Eva Svärdemo Åberg, Eva Edman Stålbrandt and Anna Wiik

The aim of this on-going practice-based study is to explore university teachers' design of digital examinations at three faculties in higher education. This study focuses on assessment design and explore how and with what variation examinations are designed digitally, multimodally and epistemologically in courses of three different professional programmes in higher education. The study addresses two research questions: How are examinations designed and aligned with intended learning outcomes (ILO) in the beginning and in the end of three different professional programs? How can assessment designs afford and constrain students' agency? The study draws on both a designs for learning perspective (Björklund Boistrup & Selander 2022) and a knowledge taxonomy perspective (Anderson & Krathwohl, 2001). Knowledge taxonomy defined by Krathwohl, (2002) will be used to draw attention to what kind of knowledge students are required to learn and how examinations are designed and aligned with ILOs in the three different professional programs. Further, we recognize each assessment designs (Bearman, Nieminen & Ajjawia, 2023) and analyse them multimodally based on the notions of design, knowledge representation, affordance and agency (Björklund Boistrup & Selander, 2022). The data collection took place at two universities in Sweden at three faculties: law, social sciences and medical faculties. In total, text-material from six courses - six syllabus, six course descriptions and twenty examinations were included for analysis. These examinations were designed to align with the forty intended learning outcomes, all of which were coded according to the knowledge taxonomy. A total of 64 codings were assigned, and all assessment designs were analyzed to determine the extent to which they empowered students to construct knowledge and self-regulate their learning and problem-solving. The analysis focused on specific design elements, such as the formulation of questions and how they encouraged students to express their epistemic agency. Our results indicate that the design of examinations realizes various assessment paths that, in diversity, fulfill the knowledge requirements of the courses. The examinations are designed with a mix of digital formats, predominantly incorporating written assessments that demand a variation of knowledge assessed through written, oral, and practical means. The design of digital assessments differs between faculties. In law and medical courses, digital assessment designs initially focus on constrained epistemic agency to address simpler, fact-based knowledge at the beginning of the program, evolving to enable students' independence and responsibility in demonstrating higher cognitive processes toward the end of the program, utilizing home-book exams. In contrast, social science courses employ home-book exams at both the beginning and the end of the program, and the question designs aim to create conceptual knowledge and foster individual agency.

Bearman, M., Ju Nieminen J H., & Ajjawia, R. (2023). Designing assessment in a digital world: an organising framework. *Assessment & Evaluation in Higher Educational*. Vol, 48, No 3, pp. 291-304.  
<https://doi.org/10.1080/02602938.2022.2069674>

Björklund Boistrup, L. & Selander, S. (2022). (eds) *Designs for research, teaching and learning. A framework for future education*. Routledge.

Krathwohl, D. R. (2002). A Revision of Bloom's Taxonomy: An Overview. *Theory Into Practice*, 41(4), 212–218. DOI: [https://doi.org/10.1207/s15430421tip4104\\_2](https://doi.org/10.1207/s15430421tip4104_2)

## **A Coaching Pedagogical Model for synchronous Collaborative Online Learning in the Context of a University of Applied Sciences - An Educational Design Research**

Päivi Timonen

Online learning has proliferated to the extent that entire degree programs can now be pursued entirely online. However, research on coaching pedagogy in education and synchronous online learning remains limited, indicating a clear research gap.

Educational design research, which can be employed to enhance learning theories, curricula, learning environments, software, and products such as teaching and learning materials (Design-Based Research Collective, 2003; Perna, 2013), forms the basis of my work. As a senior lecturer in online pedagogy at university of applied sciences (UAS), I conduct design research to advance online teaching and learning.

This educational design research is centered around two key questions: What characterizes a coaching pedagogical model for synchronous collaborative online learning in a UAS context? And, what constitutes a student-centered coaching pedagogical model for synchronous collaborative online learning? This research is grounded in the theory of sociocultural learning, where students learn within a community and construct new knowledge through interaction with others in a webinar environment and online learning (Säljö, 2004; Vygotsky, 1978).

From 2019 to 2023, this educational design research comprised three sub-studies, each representing a design cycle. The first sub-study revealed, through a systematic literature review and qualitative analysis, that the Community of Inquiry (CoI) and its three presences - social, cognitive, and teaching (Garrison, 2016; 2017; Garrison et al.) - form the underlying pedagogical theory of this research and appear suitable for collaborative synchronous online learning. Eighteen practical principles of coaching pedagogy have been implemented for synchronous collaborative online learning (Timonen & Ruokamo, 2021).

In the second sub-study, I examined online students' experiences and analyzed quantitative data from an online survey to further refine the model of synchronous, collaborative online learning student profiles. The study identified three profiles of synchronous collaborative online learners: active peer online learners, flipped online learners, and independent online learners. Flipped learning emerged as a key research finding (Timonen & Ruokamo, 2022). I developed and implemented a research-based online course for this coaching pedagogy model and tested it in the Webinar Pedagogy - Collaboration for Online Learning course (Timonen, 2021), collecting data from course participants for the third sub-study.

The third sub-study posed the questions: What factors support the student in the webinar? and, what are the characteristics of flipped learning in the presence of a Community of Inquiry in a coaching pedagogical model of synchronous collaborative online learning? Data was collected from students of the third iteration of the webinar pedagogy e-learning course using learning diaries, assignment reports, and final questionnaires. The results revealed the content of flipped learning in the presence of a Community of Inquiry in the coaching pedagogical model, as well as students' experiential knowledge of the pedagogical implementation of webinars (Timonen & Ruokamo, in process).

Based on the results of these sub-studies-research-cycles, I have developed a pedagogical model for synchronous collaborative online learning, which I look forward to presenting at the conference.

## Teachers as Designers of Social Futures: Co-developing Teacher Leadership and Student Agency in Diverse Contexts

Lynde Tan, Katina Zammit, Øystein Gilje, Line Ingulfsen, Cornelia Egge, Ola Erstad, Fei Victor Lim and Anna Åkerfeldt

This symposium is a confluence of work inspired by the New London Group's (1996) notion of pedagogy as "Design" (p.73). Drawing from empirical research conducted in Australia, Norway, Sweden, and Singapore, the five presentations critically examine how teachers' roles as designers of social futures evolve in changing times. We focus on teacher leadership and agency as they navigate diverse curricular and pedagogical tensions and opportunities to engage students in agentic meaning-making as "signs of learning" (Kress et al., 2021, p. 70).

Despite the diverse geographical locations of the various innovations in literacy education, the panel collectively agrees with Kress (2010) that "design is prospective" (p. 6). We emphasise a forward-looking approach to confront emerging issues related to the broadened notion of literacy, the materiality of texts, the digitalisation of learning spaces, and other multifarious aspects of education, including the role of schools. These ongoing changes necessitate a shift from understanding literacy solely through established curricula. They require teachers to play a leading role in being innovative in their responses to new demands in social changes and to act in the interest of students' social futures (Adami et al., 2022).

In this symposium, we approach teacher leadership and agency by interrogating three aspects of the teachers' role as designers of social futures in diverse contexts of negotiating educational challenges:

1. Teachers as designers of learning: How do teachers facilitate student agency by engaging them in transforming semiotic resources in increasingly multisensory and multimodal communication landscapes?
2. Teachers as designers for learning: How do we develop and assess signs of learning that are mediated by digital technologies as "semiotic technologies" (Zhao et al., 2014, p. 72)?
3. Teachers as designers in learning: How can teachers take hold of their professional learning to develop meta-semiotic understandings and advance their knowledge in developing their students' multimodal literacies?

Adami, E., Diamantopoulou, S., Lim, F.V. (2022). Design in Gunther Kress's social semiotics. *London Review of Education*, 20(1). <https://doi.org/10.14324/LRE.20.1.41>

New London Group. (1996). A pedagogy of multiliteracies: Designing social futures. *Harvard Educational Review*, 66(1), 60-92.

Kress, G.(2000). Design and transformation: New theories of meaning. In B.Cope & M. Kalantzis (Eds.), *Multiliteracies: Literacy learning and the design of social futures* (pp. 153-161). Routledge.

Kress, G. (2010). *Multimodality: A social semiotic approach to contemporary communication*. Routledge.

Kress, G; Bezemer, J; Diamantopoulou, S; Jewitt, C; Mavers, D. (2021). A social semiotic perspective on learning: Transformative engagement in a changing world. In G. Kress, S. Selander, R. Säljö, & C. Wulf (Eds.) *Learning as Social Practice: Beyond Education as an Individual Enterprise*. (pp. 70-102). Routledge.

Zhao, S., Djonov, E., & van Leeuwen, T. (2014). Semiotic technology and practice: A multimodal social semiotic approach to PowerPoint. *Text & Talk*, 34(3), 349-375. <http://dx.doi.org/10.1515/text-2014-0005>

Presentation 1:

## **Teachers Designing for Digital Multimodal Meaning-Making in the Current Reshaping of the Curriculum**

Anna Åkerfeldt and Sylvana Sofkova Hashemi

Sweden's digital strategy for schools was redrawn in 2023 by the government. The government is currently in the process of revising the curriculum for both pre-school and compulsory schools, focusing on facts and subject content and downplaying digitalisation in contrast to the goals set up by the EU Digital Action Plan. In the long run, how does this development influence the possibility of inclusion and equality in our educational system and society as a whole? In our research project, where we collaborate with teachers, different ways to address these issues have occurred, which will be outlined in this presentation.

The findings are based on an ongoing research project titled "Teachers' Meta-Knowledge and Assessment Practices in Digital, Multimodal Learning Environments" (2022-2024). The project draws on multimodal social semiotics (Kress, 2010), didactic design theoretical perspective

(Åkerfeldt, 2014; Selander, 2022; Sofkova et al., 2016), and design-based research (DBR) (Anderson & Shattuck, 2012). Nineteen teacher teams from two schools participated in a workshop where they utilised a tool provided by the researchers to design their lessons. The tool addressed six areas: 1) content knowledge, 2) skills, 3) timeframe, 4) space, 5) resources, and 6) reflection regarding knowledge and skills. The empirical evidence includes lesson plans, workshops, and focus group interviews with teachers. Findings revealed three key themes: a disparity in focus between content and form, a lack of explicit recognition of students' digital competence, and inadequate framing in the planned teaching with digital learning resources. These findings will be discussed in light of the current reshaping of the curriculum and the impact of social futures.

Åkerfeldt, A. (2014). *Didaktisk design med digitala resurser: en studie av kunskapsrepresentationer i en digitaliserad skola* [Didactic design with digital resources : A study of representations of knowledge in a digitalised school]. Dissertation. Stockholm: Stockholms universitet.

Anderson, T., & Shattuck, J. (2012). Design-Based Research: A Decade of Progress in Education Research? *Educational Researcher*, 41(1), 16–25. <https://doi.org/10.3102/0013189X11428813>

Kress, G. (2010). *Multimodality: A social semiotic perspective to contemporary communication*. Routledge.

Selander, S. (2022). Designs in and for learning—a theoretical framework. In L.B.Boistrup & S. Selander (Eds.), *Designs for Research, Teaching and Learning. A framework for future education* (pp. 1- 22). Routledge. <https://doi.org/10.4324/9781003096498-1>

Sofkova Hashemi, S., & Spante, M. (2016). Den didaktiska designens betydelse: IT-didaktiska modeller och ramvillkor. [The significance of didactic design: IT-didactic models and frames]. I *Kollaborativ undervisning i digital skolmiljö* [In Collaborative teaching in a digital school environment] (pp. 125–135). Gleerups.

Presentation 2:

## **Recontextualising the Multimodal Literacy Curriculum to Student Learning: Teachers as Designers**

Fei Victor Lim

Learning as a social practice (Kress et al. 2021) is subjected to many influences – curriculum, professional learning, teachers’ beliefs, and students’ needs. Even as the literacy curriculum has been broadened to include multimodal meaning-making, it is of interest to understand the impact that curriculum reforms have on student learning and to appreciate the difference a teacher can make. The conceptual framing adopted in my talk is that of teaching and learning as design (Adami et al., 2022; Kress & Selander, 2021) and teachers as designers of learning experiences (Lim & Tan-Chia, 2023). My talk draws on the data from a research project in Singapore (Lim, et al., 2022) to examine how differently two teachers teach a similar lesson on multimodal literacy to their students. It builds on my earlier paper on how teachers can design for students’ learning through multimodal composing (Lim & Unsworth, 2023). The perspective of recontextualisation (Bernstein, 2000) is applied to reflect on how the curriculum requirements are expressed through the professional learning which the researchers offered to the teachers on the project and the ways in which the teachers’ pedagogical practices are influenced by their professional learning. I reflect on the signs of student learning from their tests on interpreting multimodal texts, in the artefacts they created, and from their reflections on the learning experience. My talk concludes by discussing the implications of the policy-practice chasm and preparing learners as designers of social futures (New London Group, 1996).

Adami, E., Diamantopoulou, S., & Lim, F.V. (2022). Design in Gunther Kress’s social semiotics. *London Review of Education*, 20(1). <https://doi.org/10.14324/LRE.20.1.41>

Bernstein, B. (2000). *Pedagogy, symbolic control and identity: Theory, research, critique* (Revised edition). Rowman & Littlefield Publishers

Kress, G., Selander, S., Säljö, R., & Wulf, C. (2021). *Learning as Social Practice: Beyond Education as an Individual Enterprise*. Routledge.

Kress, G., & Selander, S. (2012). Multimodal design, learning and cultures of recognition. *The Internet and Higher Education*, 15(4), 265–268. <https://doi.org/10.1016/j.iheduc.2011.12.003>

Lim, F. V., Chia, A., Weninger, C., Tan-Chia, L., Nguyen, T. T. H., Tan, J. M., Peters, C. M., Adams, J. L., Towndrow, P. A. & Unsworth, L. (2022). *Multiliteracies in the Singapore English Language Classroom: Designing Learning*. National Institute of Education, Nanyang Technological University, Singapore.

Lim, F.V. & Tan-Chia, L. (2023). *Designing learning for multimodal literacy: Teaching viewing and representing*. Routledge.

Lim, F.V., & Unsworth, L. (2023). Multimodal composing in the English classroom: Recontextualising the curriculum to learning. *English in Education*, 57(2), 102-119. <https://doi.org/10.1080/04250494.2023.2187696>

New London Group. (1996). A pedagogy of multiliteracies: Designing social futures. *Harvard Educational Review*, 66(1), 60-93.



Presentation 3:

**Collaborative Design of Innovative Pedagogy:  
Semiotic Technology, Agency, Learning and Assessment**

Øystein Gilje, Line Ingulfsen and Cornelia Egge

The increasing use of digital devices in primary and secondary schools brings to the fore questions regarding the role of software in learning and assessment, including questions of agency and 'new writing' (Van Leeuwen, 2008; Zhao et al., 2014). This presentation explores editing software as semiotic technology from a sociocultural perspective on learning and formative assessment (Silseth & Gilje, 2019) by exploring the junction of 'new writing' in social semiotics (Van Leeuwen, 2008) and a Vygotskian perspective on digital composing (Smagorinsky, 2011; Wertsch, 1991). The data stems from a design-based innovation project named the *Multimodal Learning and Assessment* (MuLVu), where four researchers and 20 teachers worked in an iterative process, with a particular focus on student agency when solving "open" assignments in different subjects. Based on qualitative data, we are answering three interrelated questions:

1. To what extent are teachers fostering students' agency by allowing them to choose semiotic technologies for their assignments?
2. How do students use the affordances in semiotic technologies to express what they have learned?
3. What kind of criteria do teachers use in their assessment of these multimodal texts?

The findings indicate that teachers need to scaffold the students' making of the semiotic artefacts, paying particular attention to how and why the affordances in the semiotic technology can be used to make meaning. The MuLVu project has developed national resources, and the presentation will demonstrate how these provide teachers and school leaders in Norway with a metalanguage in order to work on multimodal literacy for social futures.

Silseth, K., & Gilje, Ø. (2019). Multimodal composition and assessment: A sociocultural perspective. *Assessment in education: Principles, Policy & Practice*, 26(1), 26-42. <https://doi.org/10.1080/0969594X.2017.1297292>

Smagorinsky, P. (2011). *Vygotsky and literacy research: A methodological framework*. Sense Publishers.

Van Leeuwen, T. (2008). New forms of writing, new visual competencies. *Visual Studies*, 23(2), 130-135. <https://doi.org/10.1080/14725860802276263>

Wertsch, J. V. (1991). *Voices of the mind: A sociocultural approach to mediated action*. Harvard University Press.

Zhao, S., Djonov, E., & Van Leeuwen, T. (2014). Semiotic technology and practice: A multimodal social semiotic approach to PowerPoint. *Text & Talk*, 34(3), 349-375. <https://doi.org/10.1515/text-2014-0005>

#### Presentation 4:

### **Extending Children's Multimodal Literacies with Teachers as Co-Designers of AR-Mediated Learning**

Lynde Tan and Katina Zammit

Literacy has been framed to be associated with different discourses; these include discourses on skills, creativity, process, genre, social practice, and socio-political aspects (Ivanič, 2004). Who is seen to be literate and what counts as legitimate accomplishment in a classroom also depends on the teacher's understanding of literacy (Burnett, 2022), as reflected in their approach to pedagogy, curriculum, and assessment, all guided by the official curriculum. Bernstein (2000, 2003) refers to this concept as pedagogic discourse, which is realised in the classroom through the recontextualising principle.

When creating innovative approaches to teaching literacy, teachers are consistently challenged to find a balance between providing structure and autonomy, enabling learners to have some influence over their learning process. In this presentation, we discuss the significance of positioning teachers as co-designers to weaken the framing and classification of transmissive pedagogy to reconceptualise reading, text-making, and learning spaces using augmented reality (AR) (Tan et al., 2023; Tan & Chik, 2022). Using three case studies from Australia, the presentation provides illustrative accounts of how Australian primary school teachers use AR to extend students' multimodal literacies beyond the mandated curriculum's strong classification of literacy in English. By positioning teachers as co-designers, the teachers gain technological, pedagogical, and content knowledge that develop nuanced understandings of reading, text-making which entail touch and bodily movements as new resources for multimodal meaning-making (Tan & Wang, 2023; Wang & Tan, 2023, Zammit, 2011). Using Bernstein's theory of pedagogic practice, we discuss the implications for curriculum reform, professional learning, and students' multimodal literacy learning.

Bernstein, B. (2000). *Pedagogy, symbolic control and identity: Theory, research, critique* (Revised edition). Rowman & Littlefield Publishers.

Bernstein, B. (2003). *The structuring of pedagogic discourse: Class, codes and control* (1st ed.). Routledge. <https://doi.org/10.4324/9780203011263>

Burnett, C. (2022). *Scoping the field of literacy research: How might a range of research be valuable to primary teachers?* <https://doi.org/10.7190/shu-working-papers/2201>

Ivanič, R. (2004). Discourses of Writing and Learning to Write. *Language and Education*, 18(3), 220-245

Lingard, B., & Mills, M. (2007). Pedagogies making a difference: Issues of social justice. *International Journal of Inclusive Education*, 11(3), 233-244.

Tan, L., & Chik, A. (2022). *Between worlds: Developing students' multimodal literacies using augmented reality*. Primary English Teaching Association Australia.

Tan, L.; Thomson, R.; Koh, J.H.L.; Chik, A. (2023). Teaching Multimodal Literacies with Digital Technologies and Augmented Reality: A Cluster Analysis of Australian Teachers' TPACK. *Sustainability* 2023, 15, 10190. <https://doi.org/10.3390/su151310190>

Tan, L., & Wang, T.J. (2023). Developing spatial literacy using augmented reality. In Pinhasi-Vittorio & E. Ben-Yose (Eds.), *Using Innovative Literacies to Develop Leadership and Agency: Inspiring Transformation and Hope* (pp. 100-123). IGI Global

Wang, T. & Tan, L. (2023). The conceptualisation of user-app interactivity in augmented reality-mediated learning: Implications for literacy education. *Sustainability* 2023, 15, 10949. <https://doi.org/10.3390/su151410949>

Zammit, K. (2011). Connecting multiliteracies and engagement of students from low socio-economic backgrounds: Using Bernstein's pedagogic discourse as a bridge. *Language and Education*, 25(3), 203-220.

Presentation 5:

## **Designing Social Futures through Student's Futuremaking and Transformative Agency - a European Project**

Ola Erstad

Historically, the role assigned to schools has been to train citizens so that they have the knowledge and skills to inhabit the world they live in, through processes of subjectivation, socialization and accreditation (Biesta, 2006). However, there is a general understanding that students not only need to learn to live in the world, but also to be able to think critically, imagine their own possible futures and transform their own destinies (Lipman, 2011).

The concepts of futuremaking (Erstad & Silseth, 2019) and transformative agency (Stetsenko, 2019) are used to study ways of engaging teachers and students in reflecting on possible futures, their own thoughts on personal futures and the role of education. The paper asks questions about how teachers might engage young people in ways of thinking about the futures. The empirical data is drawn from an Erasmus+ project called 'SCU4change' (see: <https://www.uv.uio.no/iped/forskning/prosjekter/erstad-scu4change/>) studying teachers and young people in four countries (Norway, Austria, Spain and Chile). The paper will focus on a project on 'sustainability' as a cross-curricular topic in a lower secondary school in Norway in 9th and 10th grade and 15 interviews with students and 3 interviews with teachers. The discussion will refer to the role of schools in designing social futures (Cope & Kalantzis, 2000) for contemporary young people living through global challenges of how to deal with possible futures.

Biesta, G.J. (2006). *Beyond learning: Democratic education for a human future*. Routledge. <https://doi.org/10.4324/9781315635811>

Erstad, O. & Silseth, K. (2019). Futuremaking and digital engagement: From everyday interests to educational trajectories. *Mind, Culture, and Activity*. 26(4), 309–322. <https://doi.org/10.1080/10749039.2019.1646290>

Cope, B. & M. Kalantzis. (2000). *Multiliteracies: Literacy learning and the design of social futures*. Routledge.

Lipman, P. (2011). *The new political economy of urban education: Neoliberalism, race, and the right to the city*. Routledge.

Stetsenko A. (2019). Radical-transformative agency: continuities and contrasts with relational agency and implications for education. *Frontiers in Education*, 4, 1-13. <https://doi.org/10.3389/educ.2019.00148>

## **"Stardust Odyssey: City's Last Stand": Redefining 'Active Citizens' in Thai Neoliberal Education and Reimagining 'A Better Society' for the Many, Through a Tabletop Game".**

Rubkwan Thammaboosadee

This paper contributes to my broader research, "Performing Inequality: The Study of Body, Noise, and Cultural Memory Transmission in Neoliberal Thailand (2023-2025)," which utilises performance studies to address socio-economic disparities in Thailand. In this paper I discuss the process of designing "Stardust Odyssey: City's Last Stand," a tabletop game developed to foster awareness and stimulate discussion on inequality amongst educational workers and students. Analysing media portrayals of diverse social groups—including affluent celebrities, salaried and informal workers, and students—the study critiques the magnification of wealth to justify privilege, while marginalising the voices and protests of others. These dynamics, highlighted during the pandemic, underscore the profound socio-economic divides in neoliberal Thailand, advocating for more inclusive narratives and solutions. This game aims to initiate meaningful dialogues and challenge the prevailing socio-economic narratives.

"Stardust Odyssey: City's Last Stand" encourages players to explore themes of sustainability, community action, precarious jobs, and wealth distribution of power and resources through the setting of a dystopian galaxy encountering a 'dust crisis'. Unlike many games where equal resources are provided from the start, each character in this game, representative of the four mentioned groups, will be assigned different default 'experience points' including 'Body, Voice, Memory.' In doing so, this game aims to depict that the concept of inequality, not limited to financial resources, extends to the locus of embodied experiences that can either limit or magnify the agency of individuals in society and, arguably, normalise inequality.

By employing the fields of applied drama and game-based learning, the game is designed not as a grid-thinking game with fixed and calculated gameplay. Instead, it combines a solid socio-economic structure that underpins the mechanics of the gameplay with human emotions and experiences, often concealed under the neoliberal agenda of transforming humans into mere sites of capital accumulation. For example, while XP points (memory, body, voice) are calculated through numeric scales, exemplifying how people's abstract agency is recruited and required by the neoliberal rationale, the game also let players freely evaluate their circumstances for their 'heart points,' the true feeling towards their body as human beings, not only physical entities. Furthermore, the game fosters dialogues during the Event Phase, allowing players to use their actual 'voice' to engage with others in making collective decisions. The core of the gameplay focuses not merely on the outcome but more so on the journey, where players will engage in dialogues, learning about other agencies in society that are gradually revealed in the game, triggering their memory of similar events happened in our society, and seeing other players as lived bodies who share the same terrain but are limited in their ability to live a better life due to inequality.

## Conceptualising pedagogical design for learning using a collaborative prototype

Dan Trowsdale

Effective design-for-learning requires an understanding of the pragmatic constraints of teaching, and knowledge of effective pedagogical approaches. The need for a breadth of knowledge and experience places a significant demand on individuals creating designs for learning. This is particularly relevant to novice designers who may lack experience in designing courses and developing learning activities, but does not exclude established educators who may be entrenched in traditional approaches to deliver learning. Given the accelerated change in the use of online and blended learning it is increasingly important for educators to incorporate online learning and digital pedagogies either by developing their own skills or collaborating with others.

An effective conceptualisation of learning designs would provide an opportunity to collaborate on a learning design, bringing experience from specialists such as learning designers, pedagogical experts and technologists. This collaboration could fill gaps in knowledge for both novice and experienced educators alike, particularly in the early stages of a design process where potentially the greatest design improvements could be made.

I have developed EdVee as part of my research into collaboration in course design and continue to use EdVee as a tool within my research to explore how pedagogy can be conceptualised and visualised to support within collaborative course design.

Drawing parallels with disciplines like product design and architecture, the initial conceptualisation of ideas in the form of sketches and prototypes, encourages creativity, iteration, and feedback loops early in the design process. Prototypes specifically enable the integration of user, specialist, and customer perspectives, aiding in cost reduction and risk mitigation by evaluating designs before full implementation (Schrage, 1999).

Frameworks for learning design foster innovation and new perspectives (Masterman, 2019). EdVee is a course design tool which provides learning designers with a quick visual way of creating early 'sketches' or 'prototypes' to conceptualise a course design. Existing prototypes in course design do exist and often focus on the temporal organization of content, but there's a gap for a prototype centred specifically on pedagogy. The output of EdVee is a visual map indicating the pedagogical alignment, and non-alignment of multiple elements of curriculum design on one page such as, how content, learning activities and assessment map to learning outcomes.

EdVee draws from design science, systems engineering, and design thinking, integrating them with constructive alignment (Biggs & Tang, 2011) to offer a framework for intentional course design. In its pilot stage, EdVee has demonstrated its ability to highlight pedagogical foundations for collaborative teams and serves as both a prototyping tool for early course concepts and a diagnostic tool for evaluating existing designs. By fostering dialogue early in the learning design process, EdVee supports an iterative approach potentially leading to more effective learning designs.

This can be presented as a 60-minute workshop or a paper presentation. It is my intention to submit a paper for the special collection issue.

Biggs, John, and Catherine Tang. 2011. *Teaching for quality learning at university*. McGraw-hill education (UK)

Schrage, Michael. 1999. *Serious play: How the world's best companies simulate to innovate*. Harvard Business Press

Masterman, Liz. 2019. "The challenge of teachers' design practice." In *Rethinking pedagogy for a digital age*, pp. 120-133. Routledge

## Investigating Place-Based Digital Multimodal Composing Practices: A Design-Based Perspective

Ming-I Lydia Tseng, Lynde Tan and Te-Lien Lynn Chou

Despite much research on digital multimodal composing (DMC) in L2 students' development in multiliteracies, little is known about place-based DMC practices. Place-based practices here refer to the orchestration of semiotic resources to represent and reconstruct the participants' spatial and cultural literacies of specific places. Guided by a design-based perspective (Kress & Jewitt, 2003) and multiliteracies (Cope & Kalantzis, 2020), this research investigated how a group of L2 students in Taiwan (N=28) integrated virtual geography-related information with visual, verbal, and auditory modal resources as affordances to engage in embodied interactions for making meaning in their multiliteracies teaching and learning.

This study was framed in the methodological paradigm of educational design research (McKenney & Reeves, 2020) to design, implement, and evaluate an innovative pedagogic intervention on place-based DCM being incorporated into L2 literacy teaching curriculum. L2 students needed to participate in tasks for multiliteracies with an emphasis on intercultural communication (Byram, 2021) and needed to collaborate with peers from diverse cultural backgrounds to complete place-based DMC projects. Multiple data sources were collected, including the participants' responses to questionnaires on multiliteracies and intercultural competence, and their place-based DMC practices in terms of textual and contextual details. Additionally, adopting socio-semiotic ethnography, 10 participants were selected for multiple case studies for in-depth analysis by examining their trajectories of composing digital multimodal artifacts, especially narratives about intercultural comparison and contrast on specific issues such as gender equality, fast fashion for responsible consumption, and green industries for sustainable development.

Qualitative analysis of the participants' multimodal ensembles and reflections was triangulated with quantitative analysis of participants' perceptions of DMC practices. Two main research findings were noted. Place-based DMC projects provided L2 participants with authentic learning contexts, being more mindful of (inter)cultural framing when situated in diverse "places" (face-to-face and virtual ones) to employ multimodal affordances for making meaning of their DMC practices. Focusing on "places" for intercultural comparison facilitated the participants' critical awareness regarding the resemiotization (Iedema, 2001) and recontextualization (Bernstein, 1996) of semiotic resources in their design of place-based DMC ensembles. Accordingly, the participants transformed their practices to leverage intercultural competence for interdisciplinary learning. These findings yield insights into future DMC instruction and research regarding L2 students' multiliteracies for intercultural learning.

Bernstein, B. (1996). *Pedagogy, symbolic control and identity: Theory, research, critique*. London, UK: Taylor & Francis.

Byram, M. (2021). *Teaching and assessing intercultural communicative competence*. Multilingual Matters.

Cope, B., & Kalantzis, M. (Eds.). (2020). *Multiliteracies: Literacy learning and the design of social futures*. Routledge.

Iedema, R. (2001). Multimodality, resemiotization: Extending the analysis of discourse as multi-semiotic practice. *Visual Communication*, 2(1), 29-57.

Kress, G. & Jewitt, C. (2003). Introduction. In Carey Jewitt, & Gunther Kress (Eds.), *Multimodal literacy* (pp. 1-18). Peter Lang.

McKenny, S. & Reeves, T. (2020). Educational design research: Portraying, conducting, and enhancing productive scholarship. *Medical Education* 55, 82-92.

Liang, W.J., Lim, F.V., (2020). A pedagogical framework for digital multimodal composing in the English Language classroom. *Innovation Language Learning and Teaching* 1-15.

## To develop a multimodal learning design with digital tools

Marina Wernholm, Kristina Danielsson, Susanne Kjällander, Emelie Patron, Andreas Ebbelind and Hanna Palmér

Challenges previously identified in teacher education in Sweden include: i) a gap between theoretical education provided by universities and the practical experiences encountered during teaching practice in schools, and ii) a lack of teaching methodologies in general, especially those involving digital tools. Despite research indicating that collaborative creation of digital animations by students can facilitate participation and cooperative learning (Ebbelind et al., 2023; Patron et al., 2024; Wernholm et al., 2023), these challenges persist. This developmental project aims to address these issues by introducing students to a theoretical model for designing learning activities and providing them with opportunities to utilize this model in planning, implementing, and evaluating learning activities involving digital tools.

The theoretical model utilised in this project is the Learning Design Sequence (LDS)-model (Selander, 2008), which is developed within the Designs for Learning theory that in turn is theoretically connected to a social semiotics perspective of multimodality (Kress, 2010).

Teacher students, university teachers and in-service teachers participate in this developmental project. Initially, university teachers and in-service teachers attended a lecture and a workshop. During this workshop, they were given the opportunity to engage in the same activity, to create a digital animation, that the teacher students are later offered to participate in. Subsequently, students utilised the LDS-model to plan, implement, and evaluate a learning design sequence with pupils. Finally, the students wrote individual reflections and shared and discussed their experiences with their peers. Following these activities, interviews were conducted with the university teachers, in-service teachers and the students to explore their experiences. Additionally, the students were asked for consent to share their written reflections with the researchers.

The participating university teachers and students came from four different subject areas in three different teacher education programmes.

Preliminary results suggest that the students experienced some challenges when using digital tools in their learning design, including technical issues and conflicts among younger pupils. However, the students also observed an improvement in pupil motivation and collaboration when given the opportunity to create digital animations to represent their knowledge. Additionally, the analysis indicates that the students perceived a clear connection between theory and practice, something that also in-service and university teachers expressed.

Ebbelind, A., Palmér, H., Danielsson, K., Patron, E., & Wernholm, M. (2023). Förskoleklass elever utforskar kombinatorik genom digitala animeringar *Utbildning & lärande*, 17(4), 87-104.

Kress, G. R. (2010). *Multimodality: A Social Semiotic Approach to Contemporary Communication*. Routledge.

Patron, E., Wernholm, M., Danielsson, K., Ebbelind, A., & Palmér, H. (2024). An exploration of how multimodally designed teaching and the creation of digital animations can contribute to six-year-olds' meaning-making in Chemistry. *Education Sciences*, 14(1).

Selander, S. (2008). Designs for Learning - A Theoretical Perspective. *Designs for Learning*, 1(1), 4-22.

Wernholm, M., Danielsson, K., Ebbelind, A., Palmér, H., & Patron, E. (2023). Young Pupils' Joint Creation of Multimodal Fairy Tales Using Analogue and Digital Resources. *Education Sciences*, 13(6).

## Prototyping Digital Support for Secondary Education Students' Self-Regulation through Participatory Design

Mattias Wickberg Hugerth, Jalal Nouri and Anna Åkerfeldt

Self-Regulated Learning has been pointed out as a key competence for learning in a world that is increasingly moving towards lifelong learning in digital environments (Anthonysamy et al., 2020). It has also been shown that schools tend to create learning environments that demand SRL skills without actually teaching the skills needed to navigate that learning environment (Dignath & Veenman, 2021). Learning Analytics has been suggested as one way of helping students develop SRL skill (Winne, 2022), but most research in the area has been focused on higher education (Heikkinen et al., 2022).

In a previous study (Hugerth et al., in press) we sent out a questionnaire to students at an upper secondary school to gain better insights into where and why students' self-regulatory processes for studying breaks down, and how technology, especially Learning Analytics and AI, may help address some of the obstacles students encounter. This presentation reports on the follow-up to that study, aiming to further understand what support for studying students want in a digital interface. A series of participatory design workshops were planned in collaboration with teachers and conducted in two iterations with students (n=100). The first iteration was conducted in 10th grade as part of the Technology course, and the second iteration in 12th grade within the course in Interface Design.

Audio recordings of the students' discussions during workshops and prototypes were collected, audio transcribed and data analysed to see what support the students implemented in their prototypes, how they implemented it and the reasoning behind their choices. Due to the timing of the data collection, we could also follow the early response among students to the release of ChatGPT and how it changed the prevalence of AI components between the two iterations. Results show that students prioritise planning in their prototypes, that they want AI and analytics integrated, adaptive and context-aware, and that they want motivational support built into a digital system for supporting self-regulation.

Anthonysamy, L., Koo, A. C., & Hew, S. H. (2020). Self-regulated learning strategies in higher education: Fostering digital literacy for sustainable lifelong learning. *Education and Information Technologies*, 25(4), 2393–2414. <https://doi.org/10.1007/s10639-020-10201-8>

Dignath, C., & Veenman, M. V. J. (2021). The Role of Direct Strategy Instruction and Indirect Activation of Self-Regulated Learning—Evidence from Classroom Observation Studies. *Educational Psychology Review*, 33(2), 489–533. <https://doi.org/10.1007/s10648-020-09534-0>

Heikkinen, S., Saqr, M., Malmberg, J., & Tedre, M. (2022). Supporting self-regulated learning with learning analytics interventions – a systematic literature review. *Education and Information Technologies*. <https://doi.org/10.1007/s10639-022-11281-4>

Hugerth, M. W., Nouri, J., & Åkerfeldt, A. (in press). "I Should, but I Don't Feel Like It": Overcoming Obstacles in Upper Secondary Students' Self-regulation Using Learning Analytics. *STUDIA PAEDAGOGICA*, 28(3). <https://doi.org/10.5817/SP2023-3-X>

Winne, P. H. (2022). Modeling self-regulated learning as learners doing learning science: How trace data and learning analytics help develop skills for self-regulated learning. *Metacognition and Learning*, 17(3), 773–791. <https://doi.org/10.1007/s11409-022-09305-y>



## **Enhancing children's cognition & early math by means of a digital teacher tool: teachers experiences**

Dilara Dilara Yildirimdemir, Sofia Frankenberg and Susanne Kjällander

Knowledge differences between children in Swedish schools are increasing and research reports large differences between children in terms of early mathematics before the start of primary school (Aunio, et al. 2009). Early intervention during the preschool years can counteract later knowledge differences (Clements & Sarama, 2011).

Although the development of digital learning tools is rapidly advancing and provides significant opportunities for enhanced learning, there are considerable challenges in terms of optimizing learning for young children in early math. Teachers' interventions provide essential support and in order for this support to be as efficient as possible, learning needs to be visualized multimodally. Many preschool teachers experience math anxiety and feel unsafe when teaching math. This can be attributed to the lack of guidance on which methods to use. Some studies also show that there is a bidirectional relationship between math and self-regulation. Development in math, for example, has the potential to support the development of self-regulation skills (e.g., ten Braak et al., 2022), which in turn has the potential to contribute to children's later academic outcome.

The aim of this paper is to explore preschool teachers own reflections on how digital multimodal (Kress, 2003) pedagogical resources – such as a teacher tool – can enhance and facilitate their teaching in early math and self-regulation skills (ten Braak et al, 2022). This paper addresses possibilities and constraints with the teacher tool.

The 4-year-project “DigiTaktik” included a 2-year workshop series guided by Designs for Learning (Selander, 2008) with teachers and researchers, in order to develop a digital teacher tool intended to support a digital math game. The teacher tool was first piloted at two preschools, thereafter implemented with approximately 400 children at 15 preschools as part of a randomized controlled trial. Bi weekly focus groups with teachers during six months at 21 preschool units were recorded, transcribed and analyzed.

The results show that the developed digital teacher tool enabled teachers to identify areas where children had difficulties, allowing them to provide support based on each child's mathematical level. Practical implications and suggestions for future research are discussed.

Aunio, P., Hautamäki, J., Sajaniemi, N., & Van Luit, J. E. (2009). Early numeracy in low-performing young children. *British Educational Research Journal*, 35(1), 25-46.

ten Braak, D., Lenes, R., Purpura, D. J., Schmitt, S. A., & Størksen, I. (2022). Why do early mathematics skills predict later mathematics and reading achievement? The role of executive function. *Journal of Experimental Child Psychology*, 214, 105306.

Clements, D. H., & Sarama, J. (2011). Early childhood mathematics intervention. *Science*, 333(6045), 968-970.

Kress, G. (2003). *Literacy in the New Media Age*. 1st ed. Oxfordshire: Taylor and Francis.

Selander, S. (2008). *Designs for Learning - A Theoretical Perspective*. *Designs for Learning*, 1(1), 4-22.

## **Challenges and Future Directions of Multimodal Assessment: A Scoping Review**

Yiqiong Zhang and Qiyun Zhu

The increasing demand for multimodal composing in today's digital era has propelled multimodal assessment to the forefront of research in applied linguistics and education. However, this field faces substantial challenges, highlighting the need for a comprehensive grasp of its current landscape. In view of this, this study employs a scoping review approach to thoroughly examine the epistemological foundations, theoretical frameworks and applications, research methods, and dominant themes in multimodal assessment research. Our findings reveal that current studies: (1) often equate multimodal composing with digital multimodal composing and adopt a binary viewpoint that neglects the interplay between humans and their environments; (2) showcase a diverse range of theoretical approaches yet frequently miss out on leveraging the full potential of these theories as guiding principles; (3) are mainly qualitative in nature; (4) show an increasing interest in multimodal formative assessments; (5) focus on academic impacts, neglect non-academic impacts; and (6) do not sufficiently focus on language-major university students, as well as primary and secondary school learners and their teachers. Based on these observations, we explore the prospective directions of multimodal assessment research in exploring human-context interactions, deepening theoretical integration and application, expanding methodological diversity, focusing on multimodal formative assessment, addressing underrepresented groups and examining non-academic impacts. By pursuing these future research directions, the field can advance towards a more nuanced understanding and practice of multimodal assessment that is theoretically informed, methodologically robust, and responsive to the diverse needs of learners and educators.

## **AI literacy for Swedish Teacher Education – a Co-design approach**

Anna Åkerfeldt, Katarina Sperling, Carl-Johan Stenberg, Cormac McGrath, Linnea Stenliden and Fredrik Heintz

This research project focuses on how Teacher Education (TE) can provide teacher students with the professional competency needed for their future working lives, where Artificial Intelligence (AI) systems are expected to play a more significant role in everyday school practice (Lindfors et. al, 2021). The ways AI could inform teachers' practices are still poorly understood (Berberich, et al., 2020; EU, 2022). In this context, teacher educators' AI literacy becomes important for the ways teacher students will later adopt, relate to, and teach about AI in their profession and as a way of enabling future initiatives around AI technologies in K-12 education.

The aim of this presentation is twofold: to introduce the project on AI literacy within the context of TE along with the current research landscape, as well as our methodological approach to conducting a design study.

The project runs over four years and is centered around two primary studies. Study I, a literature review and Delphi study lays the foundation for Study II. Study II is a design study where we together with teacher co-design content, pedagogy and discuss ethics as well as ensuring sustainability and scalability regarding AI-literacy in TE.

This presentation will present findings from Study I (Sperling et. al. 2024), which found that what teachers should know is highly influenced by computer science education and pedagogies based on exploratory teaching and learning. Questions of ethics are addressed as a matter of understanding technical configurations of data-driven AI technologies, and teachers' practical knowledge tends to translate into the adoption of digital teaching resources for teaching about AI or the integration of AI EdTech into teaching. There is a need for educational scientists to engage in and define AI literacy in different educational contexts, particularly in TE. Further, teachers need to be on the frontline in developing the content and teaching methods for AI literacy, which we will address in the design-study.

Our primary focus in this presentation will be on the methodology of Study II, which builds upon the knowledge gained from Study I. Our research adopts an integrated participatory design (PD) approach involving various stakeholders, including teacher educators, field experts, and researchers, as co-designers. This methodology promotes sustainability in the design and planning process, ensuring all participants have a say (Cumbo & Selwyn, 2022). How to ensure and involve participants and design for AI-literacy content, pedagogy and ethics will be discussed during the presentation.

Berberich, N., Nishida, T., & Suzuki, S. (2020). Harmonizing Artificial Intelligence for Social Good. *Philosophy & Technology*, 33(4), 613-638.

Cumbo, B., & Selwyn, N. (2022). Using participatory design approaches in educational research. *International Journal of Research & Method in Education*, 45(1), 60-72.

EU (2022). DigComp 2.2: The Digital Competence Framework for Citizens - With new examples of knowledge, skills, and attitudes, Eds., Vuorikari, R., Kulzer, S. and Punie, Y., EUR 31006 EN, Publications Office of the European Union, Luxembourg.

Lindfors, M., Pettersson, F., & Olofsson, A. D. (2021). Conditions for professional digital competence: the teacher educators' view. *Education Inquiry*, 12(4), 390-409.

Sperling, K., Stenberg, C-J., McGrath, C., Åkerfeldt, A., Heintz, F., & Stenliden, L. (2024). In search of AI literacy in Teacher Education: A scoping review. *Computers & Education Open*. doi.org/10.1016/j.caeo.2024.100169

## **Flowery metaphors: talk and perceptive skills in hairdressing and floristry education**

Anna Öhman, Camilla Gåfväls and Eva Klope

This paper explores the everyday use of metaphors in Swedish upper-secondary level hairdressing and floristry education, with a specific focus on the learning processes and designs of teaching when working with organic material (hair and flowers). The aim of the study was to reflexively explore the use of (verbal as well as potential non-verbal) metaphors as learning resources in naturally occurring classroom interactions in a versatile multimodal context (Gåfväls, 2024; Öhman & Klope, in press). Simply put, a metaphor in this context, is understood as “experiencing one kind of thing in terms of another” (Lakoff & Johnson, p. 5), such as designing a coiffure in the image of a flower or using a gesture to visualise the shape of a bouquet. In like manner, the current research addresses the following questions: In what ways are metaphors used to mediate communication in hairdressing and floristry education and how can metaphors be understood as valid resources in a design of practical learning environments such as hairdressing and floristry education? Methodologically, the study draws on work by Mondada (2019; 2021a, 2021b) and Goodwin (2018), adopting an ethnomethodological approach to analysing social interaction (Eilittä et al., 2023). Moreover, the study offers a methodological discussion of transcription as re-presentation and analytic tool in the context of (multimodal) interaction (Cowan, 2014), unpacking the local ecology of the classroom setting (Laurier & Boelt Back, 2023).