



AI in Learning and Instruction? Challenges, Opportunities, Transformations (AILI)

E-CER founding date: 1st of January 2024

E-CER Scope:

Currently, Artificial intelligence (AI) emerges simultaneously as an opportunity and a challenge to established traditions of learning and instruction. New sophisticated applications, which recently existed only in laboratories, are now on the market and widely used. This development raises important and challenging questions for learning and instruction, as well as for research in these areas. One interesting element of this development is the role of such resources in supporting learning and instruction in formal and informal settings. Other interesting issues concern what consequences these resources will have for the assessment of knowledge and skills, for evaluating what authorship in scholarly (and other) settings implies and for the upgrading of skills of people in a life-long perspective.

Even if the most recent debate concerns chat-bots and large language models, the field of AI in learning and instruction is broader and includes, among others, areas such as deep learning, machine learning and learning analytics. AI has the potential to automate administrative, instructional and learning tasks and, by that, unlock time available for complex analyses and discussions of human experiences and understandings of the world. At the same time, there are obvious limits to machine learning that need to be articulated in comparison to human learning. Another critical strand of AI research that needs further attention concerns the democratic and ethical challenges of such resources.

In the EARLI E-CER *AI in Learning and Instruction? Challenges, Opportunities, Transformations* (AILI), and the consequences of these developments will be analysed by following the international research in areas of AI applications in learning and instruction. The members of AILI will contribute with their own research and analyses and will participate and present their results in EARLI activities during the E-CER period.



E-CER Members:

1. Roger Säljö

Roger Säljö, Ph. D., Dr. h.c. mult., professor of educational psychology, specializes in research on learning, interaction and human development in a sociocultural perspective, where he has published extensively. Much of this work is related to issues of how people learn to use cultural tools and symbolic technologies, and how we acquire competencies and skills that are foundational to learning in a socially and technologically complex society. Between 2006 and 2018, he was Director of the Linnaeus Centre for Research on Learning, Interaction and Mediated Communication in Contemporary Society (LinCS), a national centre of excellence funded by the Swedish Research Council (2006-2018). He has been a Finland Distinguished Professor (FiDiPro) at the Centre for Learning Research at the University of Turku in Finland. He is an honorary doctor at the University of Turku and the University of Agder, and honorary professor at the University of Bath, UK. Previously he has been visiting professor at a number of universities, including Universität Konstanz (Germany), University of California San Diego (USA), Rijksuniversiteit Utrecht (the Netherlands), University of Oslo, Georg-August-Universität Göttingen, University of Agder, University of Stavanger, the University College of Dalarna, University West and the University College of Halmstad. He has supervised 52 students to their Ph. D. degrees at seven different faculties.



2. Jimmy Jaldemark

Jimmy Jaldemark is currently Associate Professor at the Department of Education, Mid Sweden University, Sundsvall, Sweden. He has worked with developing technology-enhanced learning in higher educational settings since the mid-nineties. His current research interest concerns artificial intelligence, collaborative, lifelong, mobile, networked and work-integrated aspects of learning. This interest usually is applied in settings of higher education or professional development. He is a co-founder of a national research school called GRADE (GRAduate school for Digital technologies in Education). For further information, see <https://www.miun.se/en/personnel/jimmyjaldemark>



3. Johan Lundin

Johan Lundin is a professor in Informatics, with orientation towards learning, at the University of Gothenburg. Johan is interested in how information technology changes the conditions and possibilities for learning and knowing. He explore the technology in action, conducting empirical and design oriented studies concerned with the analysis of how IT feature in social action and interaction. In 2020 Johan was elected chairman of the board for the national research network GRADE, organizing the three national graduate schools, (GRADE, UPGRADE and LIKED). He is on the committee for Educational Sciences at the Swedish Research Council, and currently PI for a WASP-HS project - The missing teacher in AI.



4. Ylva Lindberg

Ylva Lindberg is a professor of Education, specialised in Language and Literature, at Jönköping University, School of Education and Communication, Sweden. Her research focuses on evolving practices with language and literature in postdigital education and in spaces of multimodal and digital creativity. She is leading the national research graduate school CuEEed-LL - Culturally Empowering Education through Language and Literature, co-PI of the project "Ethics and values in data-driven educational practices", and sits on the board of the national research network GRADE.



5. Maarten de Laat

Maarten de Laat is professor of Augmented and Networked Learning and co-director of the Centre for Change and Complexity in Learning (C3L), University of South Australia. His research focuses on learning and value creation in social networks. He uses practice-based research methodologies to study the impact technology, AI, learning analytics and social design has on the way social networks and communities work, learn and innovate. Maarten is co-chair of the international Networked Learning Conference, editor of the

Learning Letters open access journal, and editor of the Springer book series on Research in Networked Learning.



6. Marcus Specht

Prof. Dr. Marcus Specht is Professor for Digital Education at the Technical University of Delft and Director of the Leiden-Delft-Erasmus Center for Education and Learning. He also is scientific lead of of TU Delft for the 4TU Center for Engineering Education. He received his Diploma in Psychology in 1995 and a Dissertation from the University of Trier in 1998 on adaptive information technology. From 2001 he headed the department "Mobile Knowledge" at the Fraunhofer Institute for Applied Information Technology (FIT). From 2005 to 2018 he was Professor for Learning Technologies at the Open Universiteit Nederland and head of the Learning Innovation Lab. His research focus is on Computational Thinking, Learning Analytics, AI in Education, and Virtual and Augmented Reality for Education. Prof. Specht is an Apple Distinguished Educator and was President (2013-2015) of the International Association of Mobile Learning. He currently is president of EATEL.



7. Sanna Järvelä

Sanna Järvelä is a professor in learning sciences and head of the Learning and Educational Technology Research Lab (LET) in the University of Oulu, Finland. Her research interests deal with self-regulated learning, computer supported collaborative learning and AI in education. Järvelä is the member of the Finnish Academy of Science and Letters, the past EARLI president, ISLS Fellow and and a member of the PISA 2025 'Learning in the Digital World' expert team. She is a co-PI of the Center for Learning and Living with AI (CELLA) and leader of the Hybrid Intelligence: Human-AI co-evolution and learning in multi-realities (HI) research programme in the University of Oulu 2023-2028.



8. **Andreas Gegenfurtner**

Andreas Gegenfurtner is a professor for methods in learning research at the University of Augsburg, Germany. His research focuses on digital learning, student heterogeneity, and visual expertise in the professions. He is particularly interested in using mixed-method and multi-method approaches to study digital competencies of professionals and student learning in technology-mediated settings. Andreas serves as editor for the EARLI journal *Frontline Learning Research*.



9. **Sabine Seufert**

Sabine Seufert is Professor for Business Education and Director of the Institute for Educational Management and Technology at the University of St.Gallen. Her research focuses on digital transformation and Artificial Intelligence in Education. She is particularly interested in using design research and multi-method approaches to design, implement and evaluate AI-based educational technology. Recently, her focus is on generative AI and large language models and the question how we could use it for personalized learning.

