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M104

Single Paper

Lifelong Learning

Digital Transformation, Technology and Workplace Learning

Keywords: Adult education, Artificial Intelligence, Immersive technologies for learning, Informal learning, Learning approaches, Learning environments, Learning strategies, Life-long learning, Qualitative methods, Review study, Sustainable development, Workplace learning

Interest group: SIG 14 - Learning and Professional Development

Chairperson: Marlies de Vos, HU University of Applied Sciences, Netherlands

Protecting Time, Staying Relevant: Mediated Actions for Learning in Tech Work

Keywords: Informal learning, Learning strategies, Qualitative methods, Workplace learning

Presenting Author: Omri Hadar, The Hebrew University of Jerusalem, Israel; **Co-Author:** Yifat Kolikant, Hebrew University of Jerusalem, Israel

Workers in technological professions face continuous learning demands as technologies evolve rapidly. Prior studies have conceptualized their learning as self-directed, repeatedly triggered by time-pressured problem-solving in everyday work. Although studies have described some of the learning resources they use, we still know relatively little about how these resources are enacted in the flow of work and what makes specific learning actions viable in particular situations. To address this gap, we conducted semi-structured interviews with 36 mid-career tech workers in the Israeli tech sector. Guided by Wertsch's (1998) concept of mediated action, we used inductive thematic analysis to examine how workers enact learning resources in response to work challenges and how they reason about these actions under work conditions. We found that participants relied on a rich repertoire of learning resources, each linked to specific mediated actions through which learning was accomplished. Their reasoning indicated that selection and enactment were organized around temporal norms: learning actions were assessed by time costs and fit with the available learning window, and were shaped by an obligation to protect both one's own time and colleagues' time. Accordingly, resources became viable depending on whether learning was required to occur immediately during ongoing work or within a longer time window, such as when starting a new role. Viewed through Wertsch's (1998) mediated-action lens, the convergence in participants' accounts may indicate mediation not only by local organizational factors but also by a cross-industry learning culture in tech.

Industry 4.0 technological acceptance with learning organization among operations workers

Keywords: Informal learning, Learning environments, Sustainable development, Workplace learning

Presenting Author: Renate Wesselink, Wageningen University, Netherlands; **Co-Author:** Pablo Morales, Wageningen University and Research Centre, Netherlands; **Co-Author:** Yvette Baggen, Wageningen University, Netherlands

Little is known about how a learning organization (LO) and its dimensions associate with Industry 4.0 technological acceptance. Related thereto, extant literature hints at deficiencies in understanding organizational, cultural, leadership, and change management factors in Industry 4.0 technological acceptance. Regrettably, the voice of the operations worker – who often uses Industry 4.0 technologies – is absent in these literature streams. Therefore, in a context of operations workers facing Industry 4.0 technologies, we examine which LO dimensions are associated with use behavior through behavioral intent ("technological acceptance"), and whether safety and environmental cultures amplify the effect of any LO dimensions on Industry 4.0 behavioral intent. We thereby also examine a principal proposition in the Industry 4.0 literature which suggests safety and environmental gains from Industry 4.0 implementation, but consider the possibility they might actually be prerequisites for Industry 4.0 technology acceptance. Based on a sample of 1116 operations workers, we found that a LO helps technological acceptance, but some LO dimensions are conditional on a strong safety culture – or conversely – sabotaged by a weak safety culture. An environmental culture did not contribute to LO dimensions' relatedness to technological acceptance. Theoretically, we demonstrate circumstances where the LO helps technology acceptance in the context of Industry 4.0 technologies. Practically, our research emphasizes maintaining a careful balance of a LO with a strong safety culture, which together help Industry 4.0 technology acceptance among operations workers.

Professional development due to new technologies, meta-work, and changes at work

Keywords: Adult education, Informal learning, Life-long learning, Workplace learning

Presenting Author: Vanessa Hämmerl, University of Regensburg, Germany; **Co-Author:** Regina Mulder, University of Regensburg, Germany

Technological developments in society lead to changes at work and create new, additional work, that enables or facilitates the core work with the technology but is often not seen or recognized. Research is needed to further understand this meta-work. Dimensions of meta-work distinguished are 'mobilization work', 'configuration work', 'articulation work', and 'coordination work'. A differentiation between technologies is made concerning their function (task-supporting, task-replacing, communication) and object of action (data, physical activities). It is assumed that changes at work can cause cognitive conflicts triggering employees' professional development, encompassing the learning activities 'elaboration', 'expansion', and 'externalization'. The aim of this explorative study is to gain insights into the relationships between newly implemented technologies, changes at work, meta-work, and professional development. To cover all categories of technologies, $N = 19$ employees from different domains (e.g., gastronomy, video producing, t-shirt design) using different new technologies (e.g., service robot, Adobe Firefly with AI, Ideogram) were interviewed by using the Interview To The Double Technique and the Critical Incident Technique. Various examples for meta-work activities for existing and new dimensions were reported (e.g., documenting changes, making paper back-ups in case of digital malfunctions) as well as emanating learning activities (e.g., learning from mistakes, reading in online communities) and relationships with changes at work (e.g., increased workload and mobilization work). Indications for differences between technologies were found. The results stress the importance of creating informal learning opportunities when a new technology is introduced at work.

From Immersion to Integration: Metaverse Technologies Transforming Healthcare Learning and Practice

Keywords: Artificial Intelligence, Immersive technologies for learning, Learning approaches, Review study

Presenting Author: Pauliina Rikala, University of Jyväskylä, Finland; **Co-Author:** Minna Ylönen, Finnish Institute of Occupational Health, Finland; **Co-Author:** Charlott Sellberg, University of Gothenburg, Sweden; **Co-Author:** Mads Solberg, Norwegian University of Science and Technology (NTNU), Norway; **Co-Author:** Ville Heilala, University of Jyväskylä, Finland; **Co-Author:** Teuvo Antikainen, Wellbeing Services County of Central Finland, Finland; **Co-Author:** Miguel Munoz, Wellbeing Services County of Central Finland, Finland; **Co-Author:** Tommi Kärkkäinen, University of Jyväskylä, Finland; **Co-Author:** Raija Hämäläinen, University of Jyväskylä, Finland

Metaverse technologies are evolving from isolated virtual tools into integrated learning ecosystems that combine immersive experiences with intelligent systems. Conceptual ambiguity and limited evidence hinder the understanding of their implications for healthcare learning, echoing concerns in workplace learning research. This study synthesized 49 review articles through a mapping review, employing topic modeling, hierarchical clustering, topic-guided qualitative interpretation, and computational text analytics to identify structural themes, evidentiary patterns, and implementation challenges. The findings reveal a developmental trajectory from immersive experiential learning to high-fidelity simulation and, ultimately, to integrated, data-rich clinical metaverse ecosystems that combine learning with practice. Evidence is strongest for simulation-based education, while risks include privacy, interoperability, equity, educator capacity, infrastructure, and human factors challenges. Three thematic clusters reflected this trajectory: 1) immersive therapeutic and educational applications that enhance engagement but lack long-term evidence; 2) surgical and clinical simulations that strengthen technical and team skills but face accessibility and outcome measurement gaps; and 3) integrated immersive-intelligent systems that support adaptive expertise but demand data literacy, ethical reasoning, and socio-technical coordination. The findings suggest a shift from immersion to integration, reframing professional learning as a continuous process of socio-technical adaptation. Responsible adoption requires a stronger evidence base and human-centered design to ensure that metaverse-enabled environments advance learning, equity, trust, and professional flourishing.

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M2

Single Paper

Lifelong Learning

Reflection, Professional Growth and Lifelong Learning

Keywords: Adaptive learning, Adult education, Career development, Informal learning, Life-long learning, Qualitative methods, Reflection, Teacher/trainer professional development, Work-based learning, Workplace learning

Interest group: SIG 14 - Learning and Professional Development

Chairperson: Susanna Paloniemi, University of Jyväskylä, Finland

Relationships between Professional Development, Technologies, and Changes in Work Characteristics

Keywords: Adult education, Informal learning, Life-long learning, Workplace learning

Presenting Author:Patrick Beer, University of Regensburg, Germany; **Co-Author:**Regina Mulder, University of Regensburg, Germany

New technologies are transforming work in the financial sector and shape the conditions for learning at and through work. This study examines how new technologies relate to changes in work characteristics and professional development, conceptualised as elaboration, expansion, and externalisation. New technologies were classified as task-supporting (TST), task-replacing (TRT), or communication technologies (CT). In addition to drawing on work design research, this study focuses on the intensity (absolute magnitude) and direction (increase vs. decrease) of changes in work characteristics, and tests differences by types of new technologies and relationships with professional development and work outcomes. Ongoing data collection among finance professionals in Germany (current N=95) indicates that professional development differs by types of new technologies, e.g., expansion was higher for TRT use than for TST or CT use. Intensity and direction of changes in work characteristics (e.g., workload, control) also differed between technology types. Relationships between changes in work characteristics and professional development were specific to technology types: For instance, the intensity of workload change was positively related to professional development for TST (elaboration, expansion) and for TRT/TST (externalisation), independent of whether workload increased or decreased. No similar relationships emerged for CT. Professional development showed few relationships with work outcomes (e.g., job satisfaction, emotional exhaustion, organisational commitment) in this interim sample. Overall, the findings suggest technology-specific patterns linking changes in work characteristics to professional development, enable practical implications for organisations introducing new technologies, and open up new directions for future research on professional development in environments subject to change.

Educational inequalities in lifelong learning across Europe: Evidence from PIAAC 2012 and 2023

Keywords: Adult education, Informal learning, Life-long learning, Workplace learning

Presenting Author:Aron Decuyper, Ghent University, Belgium; **Presenting Author:**Astrid Parmentier, University Ghent, Belgium; **Co-Author:**Fien De Smedt, Ghent University, Belgium; **Co-Author:**Jan De Neve, Ghent University, Belgium; **Co-Author:**Hilde Van Keer, Ghent University, Belgium; **Co-Author:**Bram De Wever, Ghent University, Belgium

Lifelong learning is a key pillar of individual development, employability, and social participation in contemporary knowledge-based societies. Despite its well-documented benefits, participation in lifelong learning remains highly uneven across the adult population in Europe. Lower-educated adults are consistently underrepresented in formal, non-formal, and informal learning activities. This persistent stratification raises concerns about the extent to which lifelong learning systems mitigate or reproduce existing social inequalities. This study examines educational inequalities in lifelong learning participation across European countries using data from PIAAC collected in 2012 and 2023. Focusing on formal learning, non-formal learning, and learning at work, the analysis combines descriptive comparisons with multilevel (logistic) regression models to assess the role of educational attainment in shaping participation. Adopting a comparative and longitudinal perspective, the study explores whether educational gaps in participation have persisted or changed over time. Preliminary results indicate that educational stratification in lifelong learning participation remains remarkably persistent across Europe, with particularly large gaps between low and high educated adults regarding their non-formal learning and learning at work in non-formal learning and learning at work. These findings contribute to ongoing debates on lifelong learning inequalities and highlights implications for policies aimed at fostering more inclusive lifelong learning systems in Europe.

Unveiling professional growth: Teachers' perceptions of a long-term specialization program

Keywords: Adaptive learning, Career development, Qualitative methods, Teacher/trainer professional development

Presenting Author:Hanna Reinius, University of Helsinki, Finland; **Co-Author:**Sorella Karne, University of Helsinki, Finland

This qualitative study explored teachers' perceptions of the effect of a long-term in-service training program on professional development and expertise. Teachers' expertise development and innovative professional activity were investigated through reflective written outputs from 49 teachers. A qualitative content analysis was conducted to identify participants' meaning-making processes related to professional development and innovative professional activity. Additionally, a discourse analysis was performed to detect discourses related to participants' professional development. Preliminary results indicate that the meanings associated with the professional development process and innovative professional activity varied across micro-, meso-, and macro-working environments. Furthermore, the discourse analysis reflected three main factors: continuous professional development, networks, and professional agency. In conclusion, professional expertise develops at multiple levels during long-term specialization programs, and new potential affordances and structural barriers to school development work are recognized.

Fostering Proactive Behaviour: The Role of Work-Related Reflection as a Mediator

Keywords: Informal learning, Reflection, Work-based learning, Workplace learning

Presenting Author:Gerhard Messmann, University of Regensburg, Germany

This paper investigates the role of work-related reflection in facilitating two proactive behaviours, namely job crafting and innovative behaviour. Specifically, reflection is addressed both as an antecedent of proactive behaviour and as an intersecting factor that mediates the effects of psychological empowerment as a proximal individual factor and participative safety as a more distal contextual factor. Understanding how proactive behaviour is facilitated is important because self-initiated, anticipatory actions are crucial for organizations and employees alike to respond to variability and change within organizations, workplaces, and work tasks. This issue was addressed in a cross-sectional questionnaire study with 200 employees of two large, for-profit organizations. Results of structural equation modelling provided support for the theoretical assumptions that work-related reflection facilitates proactive behaviour and mediates the effects of psychological empowerment and participative safety. Specifically, while psychological empowerment and work-related reflection exerted direct effects on job crafting and innovative behaviour, participative safety only exerted an indirect effect that was mediated by psychological empowerment and work-related reflection. These findings carry valuable implications for organizational practice. That is, social work environments should provide a safe space for expressing ideas and engaging in social interactions. Likewise, work design (e.g., job tasks) should enable employees to experience their work as meaningful and allow them to make relevant choices and carry out optimally challenging, impactful tasks. Finally, employees should be provided with sufficient reasons for reflection, for instance by assigning them complex tasks that require reflecting on goals, expectations, and possible action strategies.

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M4

Single Paper

Teaching and Teacher Education

Teacher Agency, Identity and Professional Learning

Keywords: Career development, Communities of learners and/or practice, Design-based research, Emotion and affect, Instructional strategies, Professional identity, Qualitative methods, Teacher/trainer professional development, Vocational education and apprenticeship training

Interest group: SIG 14 - Learning and Professional Development

Chairperson: Therese Grohnert, Maastricht University, Netherlands

Fit-Choice Motivations Predicting VET Teacher Induction Success

Keywords: Career development, Professional identity, Teacher/trainer professional development, Vocational education and apprenticeship training

Presenting Author:Christian Michaelis, University of Leipzig, Germany; **Co-Author:**Tobias Geisler, Friedrich-Schiller-University Jena, Germany; **Co-Author:**Petra Frehe-Halliwel, Friedrich-Schiller-University Jena, Germany

This study investigates how motivational factors shape early-career outcomes of Vocational Education and Training (VET) teacher entrants during the induction phase. Drawing on an integrated theoretical framework combining the 3-P model of learning (Biggs, 1999), the Theory of Work Adjustment (Dawis et al., 1964), and the Fit-Choice approach (Watt & Richardson, 2007), we examine the extent to which ten motivational dimensions, such as intrinsic career value, perceived teaching ability, as well as personal and social utility motives, influence key outcomes: identification with the profession and school, social inclusion in school, acceptance as a teacher, and dropout intentions. Using data from 729 German VET teacher entrants (41.6% with a non-traditional pathways), we employed structural equation modeling to analyze predictive relationships (CFI = 0.956; RMSEA = 0.040). Results indicate that intrinsic career value consistently emerged as the strongest predictor across multiple outcomes. Social influences positively affected social inclusion and acceptance, while motives like "time for family" were associated with higher dropout intentions. Multi-group analyses revealed pathway-specific effects. For example, intrinsic motivation was a stronger predictor of identification with the profession among non-traditional entrants. There were also negative effects for non-traditional entrants. The findings underscore the nuanced role of career-choice motivations in shaping early-career adjustment and highlight the importance of tailored support during induction, especially for teachers entering through alternative routes. This study contributes to research on professional learning and identity formation in workplace contexts, offering insights for designing induction programs that address motivational diversity and support teacher development.

Living Lab Adaptive Teaching: Improving teachers' repertoire to (better) meet students' needs

Keywords: Communities of learners and/or practice, Qualitative methods, Teacher/trainer professional development, Vocational education and apprenticeship training

Presenting Author:Maaïke Koopman, HU University of Applied Sciences Utrecht, Netherlands; **Co-Author:**Lydia Schaap, HU University of Applied Sciences Utrecht, Netherlands

The Living Lab Adaptive Teaching is a four-year educational research workshop in Dutch Senior Vocational Education (mbo) that explores adaptive teaching — responding to diverse student learning needs— through collaborative inquiry. Thirteen professional learning communities (PLCs), composed of vocational teachers and researchers, investigated how PLCs can foster improvements in pedagogical practices and what conditions influence the sustainability of these improvements. Using the Interconnected Model of Professional Growth (Clarke & Hollingsworth, 2002), a meta-PLC analyzed teachers' collaborative learning processes and outcomes, and the learning conditions of the PLCs. Data were collected via two group interviews per PLC and facilitator logbooks, then synthesized into portraits used for cross-case analysis. Findings from ten PLCs indicate that most achieved learning outcomes are in the personal domain, including new knowledge about doing research and adaptive teaching. Knowledge existing in the external domain, brought in by facilitators, was pivotal. Outcomes in the domain of practice varied; some PLCs tried out and evaluated adaptive teaching interventions, which generated insights into student perspectives on these interventions in the domain of consequence. While new pedagogical practices emerged, their scale and sustainability differed across PLCs. Broader impact was influenced by colleague involvement and the research design used by the PLC. Overall, PLCs seemed to enhance teachers' understanding and experimentation with adaptive teaching, though embedding these practices beyond PLC members remains a challenge.

From Survival to Agency: Emotion Regulation as a Professional Competence in Teacher Education

Keywords: Emotion and affect, Professional identity, Qualitative methods, Teacher/trainer professional development

Presenting Author:Shimrit Telraz Cohen, Beit Berl College, Israel, Israel; **Co-Author:**Shahar Gindi, Levinsky College of Education, Israel

A persistent challenge in Initial Teacher Education (ITE) is the "knowing-acting gap", defined as the disconnect between acquiring pedagogical knowledge and maintaining professional agency under high-pressure conditions. This study explores the implementation of a semester-long academic course focusing on Emotion Regulation (ER) as a core professional competency for pre-service teachers (PSTs). Utilizing Low-Intensity Dialectical Behavior Therapy (LI-DBT) as a meta-framework, the curriculum operationalizes clinical concepts into pedagogical tools, fostering mindfulness, distress tolerance, and interpersonal effectiveness as essential professional skills. Following a cohort of 40 PSTs specializing in education for at-risk youth, the study employs a qualitative-interpretive design using weekly reflective journals. Thematic analysis (Braun & Clarke, 2012) was used to explore participants' lived experiences as they navigated the transition from emotional reactivity to professional agency. Findings reveal a transformative developmental arc: from feeling "flooded" and helpless to establishing a "professional anchor" through the application of LI-DBT skills. Participants repurposed therapeutic validation as a pedagogical strategy, enabling them to maintain professional equilibrium during classroom crises. The study concludes that ER is not merely a soft skill but a foundational meta-competency that bridges the gap between educational theory and professional practice. By transforming "survival mode" into professional resilience, the incorporation of LI-DBT offers a scalable model for redefining teacher preparation and supporting lifelong professional learning.

Framing Pedagogical Reasoning in Collaborative Video-Based Professional Learning

Keywords: Communities of learners and/or practice, Design-based research, Instructional strategies, Teacher/trainer professional development

Presenting Author:Apostolia Roka, Göteborg University, Greece

This study explores how collaborative video-based reflective discussions support the development of teachers' pedagogical reasoning in digitalized classroom settings. Drawing on Shulman's (1987) model of pedagogical reasoning and Goffman's (1974; 1986) concepts of frame and footing, the study adopts a design-based research approach. Five researchers and nine primary school teachers participate in video-elicited discussions based on recordings of their classroom practice. The findings suggest that through joint interaction, researcher questions, video clips, and teachers' reflections, meanings shift from describing situations to problematizing them and articulating new instructional strategies. Teaching emerges as a constant exchange with students that cannot be fully scripted.

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M3

Single Paper

Lifelong Learning, Teaching and Teacher Education

Artificial Intelligence and Emerging Professional Expertise

Keywords: Adult education, Artificial Intelligence, Critical thinking, Cultural diversity, Digital literacy, Professional identity, Qualitative methods, Self-efficacy, Social media, Teacher/trainer professional development, Work-based learning, Workplace learning

Interest group: SIG 14 - Learning and Professional Development

Chairperson: Charlott Sellberg, University of Gothenburg, Sweden

Ctrl+Think: Navigating Critical Thinking and Literacy in the Age of AI

Keywords: Artificial Intelligence, Critical thinking, Digital literacy, Social media

Presenting Author:Martin Rehm, University of Southern Denmark, Denmark; **Co-Author:**Stig Børsen Hansen, University of Southern Denmark, Denmark

The rapid expansion of artificial intelligence (AI) has intensified calls to rethink critical thinking about AI and AI literacy in educational and professional contexts. While existing research has primarily focused on individual competencies, less is known about how these constructs manifest on social media platforms. This study investigates how critical thinking about AI and AI literacy are enacted and negotiated on BlueSky. Using the BlueSky API, 89,705 posts from 33,257 users published between January 2024 and December 2025 were collected based on AI-related keywords. We employ mixed methods from Educational Data Science (EDS), including large language model text annotation and topic modelling. Based on the AI Literacy Scale by Nong et al. (2024), we conduct zero-shot prompting and identify thematic structures within dominant constructs. Our results indicate that "Critical Thinking Ability" represents the most prevalent aspect of AI literacy, suggesting that users actively reflect on the implications of conversational AI tools. Our topic modeling further revealed two major discussion themes underlying this construct. Overall, the findings demonstrate that social media platforms such as BlueSky function as sites for knowledge mobilization, offering valuable insights into how critical thinking about AI and AI literacy and emerge in real-world, large-scale digital interactions.

Building inclusive futures in data-intensive work

Keywords: Artificial Intelligence, Cultural diversity, Professional identity, Work-based learning

Presenting Author:Allison Littlejohn, University College London, United Kingdom; **Co-Author:**Francisco Duran del Fierro, University College London (UCL), United Kingdom; **Co-Author:**Eileen Kennedy, University College London (UCL), United Kingdom; **Co-Author:**Steve Earl, University of Edinburgh, United Kingdom

Federated data are foundational for many forms of work, supporting interdisciplinary and intersectoral collaboration across domains. Sustainable energy or novel health treatments depend on public and private sector organisations working together via federated infrastructure. Consequently, countries are now investing large sums in federated compute infrastructures. While continual innovation of work depends on professionals using these infrastructures, it also hinges on their ability to adapt their work. For professionals to work together in new ways, they need to learn how to cultivate and negotiate diverse cultures. Therefore, a critical challenge in digital transformation lies in bringing together communities of professionals from across disciplines and sectors with distinctive epistemic cultures – i.e., diverse values, practices and ways of knowing (Knorr-Cetina, 1999). Drawing on a study funded by the UK Engineering and Physical Science Research Council (EPSRC), we explore cultural challenges that shape the use of federated Digital Research Infrastructure (DRI). Challenges were identified through thematic analysis of 31 interviews with active, inactive, and potential users across academia, industry and public sector. Conflicting experiences were positioned as a set of six tensions along two axes. During Speculative Workshops these tensions helped communities to imagine future scenarios. The scenarios were used to build a roadmap towards a more inclusive UK National Federated Compute Service. Resonating with the conference focus on how **learning and work interact**, this study connects **work-based learning** with infrastructural change, arguing that professional learning has to move beyond knowledge and skills to include negotiations around epistemic cultures, invisible work, and human agency.

AI Mediated Knowledge Transformation: Reconfiguring Expertise in Indonesian Teacher Education

Keywords: Artificial Intelligence, Qualitative methods, Teacher/trainer professional development, Workplace learning

Presenting Author:Dian Wahyuningsih, University of Southampton, United Kingdom; **Co-Author:**Nora McIntyre, University of Southampton, United Kingdom; **Co-Author:**John Schulz, University of Southampton, United Kingdom

The proliferation of Generative AI (Gen AI) compels teacher educators to renegotiate their pedagogical roles amid risks of automated instructional practices and diminishing professional autonomy. Although Indonesia has issued national Gen AI guidelines emphasising ethical literacy, transparency, and outcome-based

alignment, existing research remains tool-centred. It does not sufficiently explain how Gen AI reshapes teacher educators' professional knowledge structures in teacher-training institutions. This qualitative single-case study investigates how teacher educators at one public teacher-training university in Indonesia reconfigure their professional knowledge amid the routine use of Gen AI in daily pedagogical activities, the tensions they experience, and the strategies they use to manage them. Drawing on semi-structured interviews with five lecturers actively integrating Gen AI in pedagogical processes, data were analysed using framework analysis. TPACK is used to trace epistemic shifts across technological, pedagogical, and content domains and their intersections, while Activity Theory conceptualises Gen AI as a mediating artefact producing systemic tensions. Findings reveal a marked shift from "knowing that" toward procedural and strategic "knowing how/where," expressed through precise prompting, scholarly curation, media automation, and ethically grounded task design. These shifts generate tensions across tool-rule, tool-division of labour, and tool-object relations, which educators address through Outcome-Based Education (OBE) aligned ethical protocols, staged synthesis tasks, and the modelling of teaching presence. The study shows that AI-mediated knowledge transformation is an ongoing, negotiated form of workplace learning, reinforcing the need for institutional policies that protect professional autonomy and epistemic integrity.

Individual Differences in Teachers' Preparedness for AI in Their Daily Work

Keywords: Adult education, Artificial Intelligence, Self-efficacy, Workplace learning

Presenting Author: Siem Buseyne, Universiteit Antwerpen, Belgium; **Co-Author:** Glen Joris, University of Antwerp, Belgium; **Co-Author:** Konstantinos Tsiakas, Open Universiteit, Netherlands; **Co-Author:** Tine van Daal, University of Antwerp, Belgium; **Co-Author:** Vincent Donche, University of Antwerp, Belgium; **Co-Author:** Sven De Maeyer, Antwerp University, Belgium; **Co-Author:** Leen Catrysse, Open Universiteit Nederland, Netherlands; **Co-Author:** Halszka Maria Jarodzka, Open Universiteit, Department of Online Learning and Instruction, Netherlands; **Co-Author:** David Gijbels, University of Antwerp, Belgium

Recent research has proposed Artificial Intelligence Technological Pedagogical Content Knowledge (AI-TPACK) as a lens to capture teachers' preparedness to integrate AI-supported educational technologies in their daily work activities in pedagogically meaningful ways. However, empirical evidence on how AI-related preparedness varies across professional roles and teacher characteristics remains limited. This paper reports findings from a large-scale survey study examining teachers' preparedness for AI-supported educational technologies. Focusing on the technology-related dimensions of AI-TPACK, we examine variation as a function of teachers' background characteristics and professional roles using multiple multivariate regression analysis. Results indicate that preparedness for AI is most strongly associated with technology-focused professional roles. Educators holding an IT coordinator role report significantly higher levels across all AI-TPACK dimensions. Gender differences emerge for technological content knowledge and overall AI-TPACK. Age, teaching experience, educational degree, educational context, and pedagogical coaching roles show no significant multivariate associations. Although country of employment shows an overall multivariate effect, adjusted pairwise comparisons reveal no significant differences. These findings have implications for teacher professional development. The absence of significant differences suggests that differentiated training initiatives based on these profiles may not be necessary. The lack of a significant advantage for pedagogical coaches indicates that train-the-trainer initiatives targeting pedagogical coaches may be particularly relevant.

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M107

Workshop

Lifelong Learning

Analysing Human-AI Ecosystems: A Socio-Cultural-Material Approach to Human & Machine Learning

Keywords: Artificial Intelligence, Cognitive skills, Communities of learners and/or practice, Digital literacy

Interest group: SIG 14 - Learning and Professional Development

Analysing Human-AI Ecosystems: A Socio-Cultural-Material Approach to Human & Machine Learning

Keywords: Artificial Intelligence, Cognitive skills, Communities of learners and/or practice, Digital literacy

Presenting Author: David Guile, UCL Institute of Education, United Kingdom; **Co-Author:** Jelena Popov, UCL, United Kingdom

Debates about AI in Education are frequently polarised, framing AI either as a risk to human cognition or as a driver of increased efficiency. Such narratives overlook the sociocultural and material practices through which human and machine activities co-evolve. This workshop introduces a socio-cultural-material (S-C-M) framework that integrates insights from activity theory, sociomaterial approaches, and distributed cognition to support more situated analyses of AI in practice. The framework addresses substantive questions about how AI redistributes cognitive labour and methodological issues concerning appropriate units of analysis. It proposes ecosystems as a new unit for examining emerging human-AI configurations and offers nine research conjectures as sensitising tools. Through conceptual input and hands-on analysis of data from a machine-learning-mediated language assessment ecosystem, participants will explore how AI reshapes learning, expertise, and organisational practices. The workshop provides an accessible, empirically grounded approach for researching AI-mediated professional learning environments.

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M101

Single Paper

Lifelong Learning, Motivational, Social and Affective Processes

Motivation, Participation and Lifelong Learning

Keywords: Adult education, Cognitive skills, Curriculum development, Informal learning, Learning environments, Life-long learning, Motivation, Personality, Quantitative methods, Social aspects of learning and work, Workplace learning

Interest group: SIG 14 - Learning and Professional Development

Chairperson: Susanne Wisshak, Germany

Against All Odds: Participation of Disadvantaged Adults in Non-Formal Education

Keywords: Adult education, Life-long learning, Quantitative methods, Workplace learning

Presenting Author: Jan Kalenda, Tomas Bata University, Czech Republic; **Co-Author:** Ellen Boeren, University of Glasgow, UK, United Kingdom

This study presents the first comprehensive examination of disadvantaged adults' participation in Non-Formal Education and Training (NFE) across 30 European countries. It investigates how disadvantaged participants differ from their non-participating peers within the same social groups, the influence of multi-level factors on their participation, and the specific characteristics of their participation in NFE. Drawing on data from the 2022 Adult Education Survey, the study yields three key findings. First, their participation is shaped by a multi-layered structure of age, education, labour market, and country-level variables. Second, their likelihood of participation varies significantly between national adult learning systems. Third, patterns of engagement differ with respect to the type of NFE, mode of delivery, learning initiation, and the provision of guidance. These findings underscore the enduring structural inequalities in NFE and point to the urgent need for policy frameworks that address the multi-layered nature of factors influencing participation among disadvantaged adults.

Fostering autonomous motivation via real-world problems: the Societal Impact Project

Keywords: Curriculum development, Learning environments, Motivation, Social aspects of learning and work

Presenting Author: Yuanyuan Zhu, Maastricht University, FHML, Dept. of Educational Research and Development, Netherlands; **Co-Author:** Latifa Abidi, Maastricht University, Netherlands; **Co-Author:** Hans Savelberg, Maastricht University, Netherlands; **Co-Author:** S. Eleonore Köhler, Maastricht University, Netherlands; **Co-Author:** Rashmi Kusrkar, Amsterdam UMC location Vrije Universiteit Amsterdam, Netherlands; **Co-Author:** Diana Dolmans, Maastricht University, Netherlands

Background: Learning from real-world tasks is crucial for university students, as it supports both learning and professional development. We designed an eight-month extracurricular initiative, the Societal Impact Project (SIP), based on authentic, collaborative, and scaffolded learning principles to foster first-year students' autonomous motivation. The SIP engaged students in addressing society-relevant problems, collaborating in small groups, and receiving coaching support. We explored students' motivation and factors that impact it experiences alongside teachers' perspectives. Method: Focus groups with students (n=18) and teachers (n=5) were conducted after the SIP and analyzed using thematic analysis. Results: Three themes emerged: (1) Society-relevant problems stimulated learning and challenged students to apply knowledge, while they required careful alignment with students' ongoing study and stakeholder interactions; (2) Autonomy with support motivated students, as structured guidance and feedback helped them navigate freedom in project tasks; (3) Collaboration and the feeling of relatedness could enhance or hinder motivation, with effective communication being key to engagement. Conclusion: The SIP illustrated how real-world, authentic learning experiences can simultaneously foster competence, autonomy, and relatedness when designed with support. These findings provide practical insights for designing education that integrate society-relevant experiences to enhance both motivation and

learning. Keywords: autonomous motivation, authentic learning, real-world tasks, collaborative learning, scaffolding, societal challenges, higher education, Self-determination Theory
209 words

Personality modulates participation in learning, numeracy use and proficiency in Finnish adults

Keywords: Cognitive skills, Informal learning, Life-long learning, Personality

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Participation in formal, nonformal and informal lifelong learning is related to higher proficiency in key information processing skills, such as numeracy. The PIAAC Cycle 2 data measuring these skills includes a brief (Big Five) personality trait scale to chart individual social skills. Using the Finnish data ($n = 4,061$), we explored how individual personality traits predict training participation, numeracy skill use at work and numeracy proficiency. The traits, especially openness, extraversion and emotional stability, predict proficiency in information processing, and proactive behavior as well as its underlying motivational factors in work contexts. Identification of these factors can benefit inclusive design of lifelong learning opportunities.

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M5

Single Paper

Learning and Social Interaction, Lifelong Learning

Learning Through Interaction, Communication and Networks

Keywords: Communication skills, Cooperative/collaborative learning, Emotion and affect, Personality, Quantitative methods, Social aspects of learning and work, Social interaction, Work-based learning, Workplace learning

Interest group: SIG 14 - Learning and Professional Development

Chairperson: Ashley Norval, Wageningen University and Research Centre, Denmark

When do Professionals Learn from Errors? On Climate, Networks, and Personality

Keywords: Personality, Quantitative methods, Social aspects of learning and work, Workplace learning

Presenting Author:Therese Grohnert, Maastricht University, Netherlands; **Co-Author:**Diane Breesch, Vrije Universiteit Brussel, Belgium; **Co-Author:**Menno Craninckx, Vrije Universiteit Brussel, Belgium; **Co-Author:**Linde Kerkhofs, IÉSEG School of Management, France; **Co-Author:**Marie-Laure Vanderhoute, Vrije Universiteit Brussel, Belgium

Errors are an unavoidable feature of professional work, but they can serve as powerful triggers for learning, especially when shared with others. Existing studies on social error learning focus largely on high-reliability settings and tend to examine organisational conditions, offering limited insights into how individual characteristics interact with the environmental in fostering social error learning. This study explores this gap, conceptualising error learning as post-error help-seeking in one's professional network. Drawing on socio-cultural perspectives on professional learning, we examine how network characteristics, error management climate (EMC), and personality traits jointly shape social learning from errors in a knowledge-intensive professional service context. Survey data were collected from 387 Dutch and Belgian auditors, who reported on 1,387 post-error help-seeking relationships. Using an egocentric network approach and multilevel regression analyses, we examined the effects of network characteristics (hierarchy, accessibility, familiarity, psychological safety), EMC (open vs. blame), and personality traits (Big Five and Dark Triad). Results show that relational network characteristics explain the largest share of variance in both help-seeking frequency and value. Personality traits related to EMC in different ways, with 'bright' traits aligning with one's EMC, and 'dark' traits showing strategic behaviour. The study advances a relational, interactionist account of professional learning from errors and offers insights for fostering learning-oriented workplace environments.

Emotional Agency at Work and Psychological Safety in an Organizations Strategy Implementation

Keywords: Emotion and affect, Quantitative methods, Social interaction, Workplace learning

Presenting Author:Elina Koivusalo, University of Jyväskylä, Finland

A comprehensive review of extant literature reveals that human factors, such as interaction, attitudes, behavior, and consideration of emotions, have been identified as significant factors that influence the success or failure of strategy implementation. Research indicates that when employees understand and address each other's emotional needs, it fosters psychological safety by enhancing open interaction. Conversely, effective communication and interaction have been demonstrated to align employees' behaviors with the intended strategy. When employees feel safe, they are encouraged to use their emotional competencies to influence work practices and related behaviors within social interactions, thereby facilitating strategy implementation. The aim of this dissertation was to examine the relationship between psychological safety and emotional agency at work to the implementation of organizations' strategy by utilizing structural equation modeling. The results offer valuable insights into how the mechanism of these emotional constructs facilitate successful strategy implementation.

Learning from communicative dilemmas in professional-patient encounters at a PET-CT facility

Keywords: Communication skills, Social interaction, Work-based learning, Workplace learning

Presenting Author:Asa Makitalo, University of Gothenburg, Sweden; **Co-Author:**Karl Henrik Storhaug Reinås, University of Oslo, Faculty of Education, Norway; **Co-Author:**Mona-Elisabeth Rootwelt-Revheim, University of Oslo, Norway; **Co-Author:**Kjersti Johnsrud, University of Oslo, Norway; **Co-Author:**Håvard Halland Fretheim, University of Oslo, Norway

This study explores communicative dilemmas that arise in clinical encounters between radiographers, bioengineers, and patients preparing for PET-CT examinations due to suspected inflammatory rheumatic disease. Drawing on a sociocultural perspective, fourteen video-recorded encounters were analysed to understand how institutional routines, standardized scripts, and the sociomaterial environment shape the interaction. The findings show that established workflows are strongly oriented toward ensuring image quality, safety, and optimal timing, which reinforces a treatment-centred logic. These conditions often constrain opportunities for rapport-building, responsive dialogue, and patient participation. Yet the analysis also reveals moments where professionals re-negotiate these constraints—through adapted terminology, mitigation of potentially distressing language, or social conversational openings—creating affordances for shared meaning-making and patient engagement. Central to the study is the role of professional learning in navigating these tensions. The communicative dilemmas observed highlight how professionals must continually balance procedural demands with responsiveness to the person. Such balancing work is not merely interpersonal but constitutes an opportunity for learning about how institutional norms, material artefacts, and clinical procedures shape communicative possibilities. By making these practices visible, the study contributes empirical insights into how diagnostic environments might be re-designed to support a shift toward person-centred care, where professionals develop new ways of engaging patients as knowledgeable participants in their own treatment.

Organisational Transactive Memory Systems and Learning Networks among Military Educators

Keywords: Cooperative/collaborative learning, Social aspects of learning and work, Social interaction, Workplace learning

Presenting Author:Mariko Matsuzaki, KU Leuven (BE) / Royal Military Academy, Belgium; **Co-Author:**Katrien Vangrieken, KU LEUVEN, Belgium; **Co-Author:**Salvatore Lo Bue, Royal Military Academy, Belgium

Military educators are expected to continuously develop their teaching practices to prepare personnel for demanding and evolving operational contexts. Collaborative learning offers timely access to knowledge and facilitates professional development; however, military contexts characterised by geographical dispersion and turnover pose challenges for sustaining such learning. This study examines learning networks among military educators through the lens of transactive memory systems (TMS), defined as shared understandings of "who knows what" and how expertise can be accessed within a collective. While prior research has predominantly examined TMS at the team level, less is known about how such systems operate at the organisational level and support learning across formal team boundaries. Adopting a networked perspective, the study investigates organisational TMS by identifying boundary spanners who connect different groups and by examining how communication practices shape collaboration and the sharing of training- and teaching-related knowledge. Using survey-based social network analysis, we examine learning relationships among approximately 500 military educators across eight training centres in Belgium. The survey includes demographic items as well as dyadic and team-level measures based on validated instruments for transactive memory systems, vicarious learning, and internal team learning. Analyses reveal variation in learning and communication structures across training centres, pointing to different organisational conditions for coordination and knowledge exchange. By extending transactive memory systems research to the organisational level and adopting a social network approach, this study provides empirical and methodological insights into how professional learning networks are structured and how knowledge

evolves across formal team boundaries in organisations.

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M101

Single Paper

Lifelong Learning

Single Paper paper_type_1 session 7

Keywords: Development, Informal learning, Life-long learning, Qualitative methods, Social aspects of learning and work, Work-based learning, Workplace learning

Interest group: SIG 14 - Learning and Professional Development

Chairperson: Lara Wulleman, University of Amsterdam, Netherlands

What is HRD? - An analysis of employee, manager, and HRD perspectives in Dutch organizations

Keywords: Development, Life-long learning, Qualitative methods, Social aspects of learning and work

Presenting Author:Jolanda Botke, Tilburg University, Netherlands; **Co-Author:**Leonie Hirtreiter, KU LEUVEN, Belgium; **Co-Author:**Henriette Lundgren, University of Georgia, United States; **Co-Author:**Rob Poell, Tilburg University, Netherlands

Human resource development (HRD) has gained popularity as an important business investment. However, how HRD works and/or should work in organizations can depend on the different perspectives that HRD professionals, managers, and employees bring to the fore. Based on the learning-network theory (LNT), this study aims to shed light on the differences and similarities in the perceptions and expectations of HRD held by HRD professionals, managers, and employees. A total of 56 previously conducted semi-structured interviews with these stakeholders were subjected to a secondary analysis. Findings showed that, while similarities across the three stakeholders emerged in a number of HRD domains, managers and especially employees also held rather different perspectives compared to HRD professionals. In line with LNT assumptions, managers had different ideas about stakeholder expectations and further changes needed in HRD. Employees showed many different views in these same areas but also in terms of HRD roles/activities and changes that had occurred in HRD. This implies that HRD professionals should consider that managers and, especially, employees view HRD differently but also expect different things from HRD.

Role models as work-based learning resources in teachers' professional networks

Keywords: Informal learning, Life-long learning, Qualitative methods, Social aspects of learning and work

Presenting Author:Brent Theys, Ghent University, Belgium; **Co-Author:**Ruben Vanderlinde, Ghent University, Belgium; **Co-Author:**Noel Clycq, University of Antwerp, Belgium

Learning and work are increasingly understood as inseparable, with professional learning emerging through participation in everyday work practices and social interaction. Role models are frequently invoked as influential learning agents, yet they remain weakly theorised within research on professional learning and development and are often conflated with formal roles such as mentoring or coaching. This study conceptualises role models as situated, work-based learning resources embedded in teachers' professional networks. Building on the status-attitude framework, which distinguishes between recognition of role models (status) and their enacted influence on others' learning (attitude), we examine how role modelling operates as an informal learning mechanism at work. Data were collected through participatory mapping and ego-network interviews with 50 in-service teachers, enabling analysis of both relational positioning in professional networks and teachers' interpretations of learning value in daily work practices. Findings indicate that role models support learning primarily through everyday interaction rather than intentional guidance or formal arrangements. Teachers attribute learning value to colleagues who make professional reasoning visible, share uncertainty, and engage reflectively and relationally with others. Role modelling thus emerges as a distributed, networked learning process embedded in collaborative work practices, rather than a dyadic or hierarchical relationship. Perceived learning impact is more strongly associated with role model attitude than with formal status or organisational position. The study contributes to learning-at-work research by theorising role models as informal, networked learning resources distinct from mentoring and coaching, and by demonstrating the value of network-based methods for studying professional learning.

Time to Learn? A Qualitative Interview Study on Organizational Learning Time

Keywords: Informal learning, Life-long learning, Qualitative methods, Workplace learning

Presenting Author:Katja Häußermann, Ulm University Institute of Psychology and Education, Germany; **Co-Author:**Lea Ghebre, Ulm University Institute of Psychology and Education, Germany; **Co-Author:**Tina Seufert, Ulm University, Germany

Work-related learning is becoming increasingly important in the context of rapid technological and organizational change, yet lack of time remains one of the main barriers to employee learning. One promising but still under-researched approach is to introduce organizational learning time, during which employees voluntarily engage in self-directed, informal learning related to their work. The aim of this exploratory qualitative study with ten semi-structured interviews was to examine how employees perceive the hypothetical introduction of one hour of organizational learning time per week and which factors they consider relevant for its use. Overall, participants reacted predominantly positive and viewed learning time as an *opportunity for personal development* and as a *signal of appreciation by the employer*. Nevertheless, concerns were expressed regarding *compatibility with everyday work demands*, *performance pressure*, and the perceived *rigidity* of a fixed learning-time arrangement. Both personal and contextual factors were mentioned to influence the use of organizational learning time. Key factors named by our sample included *informal support*, such as social acceptance among colleagues, as well as *formal support* including guidance on how to use learning time. In addition, *lack of time* due to staff shortages and high workload was identified as a barrier to making use of learning time. The factors that were identified largely aligned with those known to influence informal learning. Future research should move beyond hypothetical scenarios, implement and evaluate organizational learning time across organizations and incorporate managerial perspectives to identify key conditions and design features for its sustainable use in professional development.

Challenges and Learning Needs of Heat Pump Installers: A Workplace Learning Barriers Perspective

Keywords: Life-long learning, Qualitative methods, Work-based learning, Workplace learning

Presenting Author:Mert Tutenkan, University of Twente, Netherlands; **Co-Author:**Sebastian Dennerlein, IT:U Interdisciplinary Transformation University Austria, Austria; **Co-Author:**Mohammadreza Farrokhi, University of Twente, Netherlands; **Co-Author:**Tingting Zhu, University of Twente, Netherlands; **Co-Author:**Maaike Endendijk, University of Twente, Netherlands; **Co-Author:**Wilko Rohlf, RWTH Aachen University, Germany

Energy transition increases the need for a skilled workforce for efficient heat pump installation. However, recent studies show persistent efficiency issues, suggesting a misalignment between training programs and practical demands. The current study explores the learning needs and challenges by focusing on the workplace learning barriers faced by installers to understand this misalignment. Fifteen semi-structured interviews were conducted with stakeholders from the Netherlands, Germany, and Belgium. Data were analyzed using qualitative content analysis, combining deductive coding based on a framework for workplace learning barriers with inductive development of subcategories. Identified subcategories were classified as either learning challenges or learning needs, and frequency analysis was used to identify these barriers in terms of challenges and learning needs. Results showed that while key challenges included acquiring inappropriate knowledge (e.g., oversizing heat pumps) and inhibiting factors related to learning content (e.g., difficulties in learning theoretical principles), the most prominent learning needs were failure to meet learning preferences and training needs, reflecting a strong demand for practical, context-specific, and cross-domain training, and lack of prior knowledge in hydraulics, system sizing, and heat pump fundamentals. Overall, the findings were discussed within white- and blue-collar contexts, and the implications of the refined framework were examined for blue-collar workers.

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M3

Single Paper

Learning and Social Interaction

Collaborative Learning and Knowledge Building Across Contexts

Keywords: Collective learning, Cooperative/collaborative learning, Learning environments, Longitudinal studies, Qualitative methods, Quantitative methods, Secondary education, Self-regulated learning and behaviour, Teacher/trainer professional development

Interest group: SIG 14 - Learning and Professional Development

Chairperson: Regina Mulder, University of Regensburg, Germany

Characterising Schools' Evidence Informed Practices: Three Profiles of Research Engagement

Keywords: Cooperative/collaborative learning, Learning environments, Qualitative methods, Secondary education

Presenting Author:Janneke Sleenhof, Eindhoven School of Education, Netherlands; **Co-Author:**Christa Krijgsman, Eindhoven University of Technology, Netherlands; **Co-Author:**Gonny Schellings, Eindhoven University of Technology, Netherlands; **Co-Author:**Marieke Thurlings, Eindhoven University of Technology, Netherlands; **Co-Author:**Femke Geijssels, Tilburg University, Netherlands

This study examines how secondary schools engage in evidence-informed practices (EIP) and which factors shape their research culture. EIP involves drawing on professional knowledge, research, and/or school-level data to substantiate decisions about educational improvement (Vanlommel & Van den Boom-Muilenburg, 2024) and is vital for addressing increasingly complex educational challenges. The aims of this paper are: 1) gain insights into educational professionals' perceptions of barriers and enablers of EIP, and 2) characterise different school types in relation to EIP. Consequently, this study captures both individual perceptions and the school's collective dynamics. We draw on the Quality Use of Research (QURE) model, to identify key factors that enable EIP (Rickinson et al., 2022). Data were collected in eight schools through a questionnaire completed by teachers and school leaders (N=426) and through eight focus group interviews. Analysis of the questionnaire data resulted in detailed insights into barriers of EIP as perceived by individual professionals. Analysis of interview data resulted in collective perceptions of school characterizations. By a cross-case analyses, three school types emerged from these characterizations: 1. Isolated and Individual; 2. Fragmented and Overburdened; 3. Open and Learning-Oriented. Especially insufficient support from school leaders, and lack of an open culture that facilitates communication and knowledge sharing determine a school's engagement with EIP. Opportunities lie in creating a culture of trust and safety so teachers feel as part of a collective, where collaboration is stimulated and encouraged. The typology offers a practical lens for identifying growth opportunities and designing context-sensitive interventions.

A video-based observation study of the role of support in teaching behaviour of novice team teachers

Keywords: Cooperative/collaborative learning, Longitudinal studies, Quantitative methods, Teacher/trainer professional development

Presenting Author:Dries Mariën, University of Antwerp, Belgium; **Co-Author:**Ruben Vanderlinde, Ghent University, Belgium; **Co-Author:**Elke Struyf, University of Antwerp, Belgium

This study examines how structured support influences the development of effective teaching behaviour among beginning team teachers within primary education. Through a video-based longitudinal approach, the study observed team teaching practices across six behavioral dimensions, with teams receiving varying levels of support: no support, limited support (group sessions), or intensive support (group and coaching sessions). Results indicate that intensive support most significantly enhances teaching, especially in complex behaviours like adaptive teaching. Teams exhibited five distinct development profiles: consistently struggling, stagnating, improving, declining, and fluctuating. These profiles illustrate the diverse trajectories of beginning team teachers' effectiveness. This research provides valuable insights into how targeted support can enhance team teaching effectiveness and suggests that coaching and collaborative learning strategies are pivotal for fostering high-quality teaching practices in team teaching classroom settings.

Myself, Others, and the Cross-Organizational Team: Regulation of Learning in Industry Collaborations

Keywords: Cooperative/collaborative learning, Longitudinal studies, Qualitative methods, Self-regulated learning and behaviour

Presenting Author:Jana Hübner, Vrije Universiteit Amsterdam, Netherlands; **Co-Author:**Roy Sijbom, Vrije Universiteit Amsterdam, Netherlands; **Co-Author:**Christine Moser, Vrije Universiteit Amsterdam, Netherlands; **Co-Author:**Matthijs Baas, Universiteit van Amsterdam, Netherlands

Cross-organizational teams are a promising context for collective learning and developing solutions for complex societal and industry challenges. Existing theory on socially shared regulation of learning explains how groups manage their learning process. However, difficulties of group-level learning are amplified by the diverse organizational backgrounds of participants in cross-organizational teams. These teams have to manage their distinct interests, goals, and strategies to find a common ground for collective learning. We aim to answer: 1) How do members of cross-organizational teams manage their different organizational backgrounds to enable a socially shared regulation of learning? 2) How does this process unfold over time? Applying a qualitative single-case study methodology, we collected interviews and observational data from the participants of a public-private partnership in the Dutch logistics sector over the course of one year. Preliminary findings indicate that participants initially evaluated their learning primarily in terms of applicability to their home organization. Collective regulation of the learning was driven mostly by the facilitator. Over time, however, increasing familiarity and identification with the partnership appeared to foster greater shared responsibility for learning processes. The study contributes to research on cross-organizational learning by highlighting the interplay role that individuals and their organizational backgrounds play in the socially shared regulation of learning and its outcomes within cross-organizational teams.

Understanding Learning Communities in Logistics: Knowledge Sharing and KSA Acquisition

Keywords: Collective learning, Cooperative/collaborative learning, Learning environments, Longitudinal studies

Presenting Author:Astrid Lacroix, University of Amsterdam, Belgium; **Co-Author:**Roy Sijbom, Vrije Universiteit Amsterdam, Netherlands; **Co-Author:**Matthijs Baas, University of Amsterdam, Netherlands; **Co-Author:**Jessie Koen, Netherlands Organisation for Applied Scientific Research (TNO), Netherlands

Learning communities (LCs) are increasingly implemented to support continuous learning in sectors characterized by rapid technological and organizational change, such as logistics. By enabling employees and interns to interact across organizations, LCs are assumed to enhance knowledge sharing and facilitate the development of knowledge, skills, and abilities (KSAs). However, empirical evidence on whether, why, and when LCs are effective remains limited. This study investigates how LCs foster KSAs, focusing on learning climate perceptions and knowledge sharing. Using a multilevel longitudinal design across five measurement waves in 11 LC programs in the Dutch logistics sector, we examined within-person processes while controlling for participants' own knowledge sharing. Multilevel mediation analyses tested whether learning climate indirectly relates to KSAs through knowledge sharing behaviors by others, and whether facilitator support moderates this pathway. Our findings indicate that within-person variations in learning climate perceptions drive KSAs directly, and that knowledge-sharing behaviors by others partly mediate this relationship in a learning community context. Facilitator support did not moderate the indirect associations. These findings advance research on learning communities by demonstrating why and when KSA acquisition occurs, showing that higher than usual learning climate perceptions foster learning through increased knowledge sharing by others during these LCs.

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M4

Single Paper

Assessment and Evaluation, Educational Policy and Systems, Learning and Social Interaction

Transitions Between Education, Work and Professional Careers

Keywords: Assessment methods, Career development, Creativity, Development, Feedback, Informal learning, Quantitative methods, Secondary education, Vocational education and apprenticeship training, Workplace learning

Interest group: SIG 14 - Learning and Professional Development

Chairperson: Alberto A.P. Cattaneo, Switzerland

The Role of Career Resources and Training Quality for Post-VET Transitions

Keywords: Career development, Quantitative methods, Vocational education and apprenticeship training, Workplace learning

Presenting Author:Christian Michaelis, University of Leipzig, Germany; **Co-Author:**Susan Seeber, Georg-August-Universität Göttingen, Germany

While school-to-work transitions are often non-linear, research on the critical second threshold—pathways after completing Vocational Education and Training (VET)—remains scarce. This study addresses this gap by investigating how career resources and perceived training quality predict intended post-VET transitions. Adopting a trainee-centred perspective, we analyzed data from N=582 German dual-system apprentices. Using regression models, we examined predictors of the intent to (1) stay in the training company, (2) remain in the trained occupation, and (3) pursue further education or a study program. Results reveal distinct predictive constellations for each pathway. Intention to stay in the company was best explained ($R^2=0.40$) by strong operational identity ($\beta=0.374$) and perceived internal career opportunities ($\beta=0.164$). Intention to remain in the occupation was primarily driven by occupational identity ($\beta=0.444$). The intent for further education or a study program was associated with higher occupational expertise, career exploration, and learning intention. A notable finding is that a manageable workload in vocational school, not the company, increased company retention intent. The study confirms the prognostic validity of career resources and training quality for post-VET transitions, showing that company retention, occupational retention, and educational progression are influenced by different factors. These findings refine the discourse on VET outcomes and highlight the complexity of post-graduation decisions, pointing to the need for longitudinal, phase-sensitive research.

The Role of Internship Quality during Lower Secondary Education for the Transition to VET

Keywords: Career development, Secondary education, Vocational education and apprenticeship training, Workplace learning

Presenting Author:Julia Haas, University of Konstanz, Germany; **Co-Author:**Robin Busse, Technical University of Darmstadt, Germany; **Co-Author:**Stefanie Findeisen, University of Konstanz, Germany

A successful transition from school to vocational education and training (VET) is a crucial prerequisite for young people's later career success. Internships in secondary education are a key measure of career guidance and can facilitate these school-to-VET transitions. Drawing on a theoretical model that emphasizes identity and social learning processes during internships as important sources of career resources and career success, this study examines an integrated framework linking internship quality, career resources, and career success in the context of school-to-VET transitions. Using longitudinal secondary data from the German National Educational Panel Study (NEPS) with two measurement points, the study investigates how different aspects of internship quality in lower secondary education are associated with career goal specification and whether career goal specification mediates the relationship between internship quality and the transition to VET. A path analysis was conducted on a sample of students who completed an internship in or before grade 9 and left general education after grade 9 or 10. The results indicate that learning experiences and autonomy during internships are associated with career goal specification, even when controlling for the subjective internship experience (as an indicator of person-job fit). Moreover, career goal specification mediates the relationship between learning experiences and the transition to VET. Other internship quality aspects, including school-based supervision, showed no significant effects. Overall, the findings provide empirical support for theoretical assumptions on internship-based career development and highlight the importance of learning experiences in internships for fostering successful school-to-VET transitions.

Connecting school and work? Programmatic assessment as a promising approach in Dutch VET

Keywords: Assessment methods, Feedback, Vocational education and apprenticeship training, Workplace learning

Presenting Author:Marlies de Vos, HU University of Applied Sciences, Netherlands; **Co-Author:**Liesbeth Baartman, University of Applied Sciences Utrecht, Netherlands; **Co-Author:**Judith Gulikers, Wageningen University, Netherlands

Learning at school and learning at the workplace can be connected through Programmatic Assessment (PA), an assessment approach aimed at maximising assessment for learning while also enabling educators to arrive at robust decisions about students' progress. It allows students to collect evidence of their learning both at school and at the workplace. This research focuses on how VET teams design and implement PA to foster learning. The results show that implementing PA is challenging and requires teams to balance learning and assessment. At the same time, PA emerges as a promising assessment approach as it has the potential to cross the boundary between school and work and foster learning in both contexts.

Developing Graduate Journeys: Mobilising Symbolic Resources to Navigate Transitions to Work

Keywords: Career development, Creativity, Development, Informal learning

Presenting Author:Jelena Popov, UCL, United Kingdom

This paper examines young people's transitions from higher education into the labour market, drawing on sociocultural theory and the analytical categories of symbolic resources and integration of experience. Using digital diary methods that combine text, images, videos in response to co-produced tasks, the paper describes two graduates' journeys from the sample of twenty, exploring how internalised cultural elements and guidance shaped aspirations, strategies, and emotional regulation during job search and career planning. The analysis reveals a diverse repertoire of integrated symbolic resources including disciplinary knowledge, family narratives, global entrepreneurial discourses, demands from extracurricular practices, and work experiences that participants mobilised to assemble aspirations, realise opportunities and sustain agency in the face of labour market uncertainty. These internalised and integrated symbolic resources were then externalised through strategic actions and plans as well as imaginations of the future, bridging personal and cultural meanings while navigating graduate labour market opportunities. Conceptually, this paper suggests the need for a mediated understanding of young people's transitions, understood here as a sociocultural process underpinned by the dynamic and developmental cycles of internalisation and externalisation. This account of transitions can account for both novel, creative and agentic actions of young people as well as the co/reproduction of social meanings and positions. Methodologically, the paper argues that digital diaries offer a useful new tool for studying the experience of transitions as a culturally mediated process because they can capture both its reflective and enacted aspects, and enable a longitudinal design with multimodal data.

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M107

Single Paper

Instructional Design, Lifelong Learning, Teaching and Teacher Education

Training Effectiveness, Transfer and Competence Development

Keywords: Adaptive learning, Competencies, Instructional design, Life-long learning, Motivation, Qualitative methods, Reflection, Teacher/trainer professional development, Transfer of learning, Workplace learning

Interest group: SIG 14 - Learning and Professional Development

Chairperson: Monika Nerland, University of Oslo, Norway

The added value of Perceived Training Effectiveness in Military Pilot Training

Keywords: Adaptive learning, Instructional design, Qualitative methods, Teacher/trainer professional development

Presenting Author:Olaf Hornes, Radboud University, Netherlands; **Co-Author:**Merel van der Wal, Radboud University Nijmegen, Netherlands; **Co-**

Author:Jelke van der Pal, Nederlands lucht- en Rumtevaart Centrum, Netherlands; **Co-Author:**Etienne Rouwette, Radboud University Nijmegen, Netherlands

TitleThe added value of Perceived Training Effectiveness in Military Pilot Training(72 characters)Abstract (206 words)In high-risk professional domains such as military aviation, training is often seen as the place where effective professional practice takes shape. Yet, what constitutes "effective" aviation training remains conceptually ambiguous. Existing literature, syllabi and training manuals, qualification standards and training regulations offer important reference points for assessment of training effectiveness. In addition to offering general standards and guidelines, the literature also indicates that training effectiveness contains a context-specific and individual dimension.This study examines how military in-service aircrew members perceive the strengths and limitations of standardized training programs versus tailored training programs. Interview findings reveal a broad appreciation for standardization as a necessary baseline for qualification and comparability. At the same time this data shows a clear desire for greater flexibility to better accommodate individual learning trajectories, prior experience, and changing operational demands. Participants particularly emphasize the value of adaptive scenario design, instructor judgment, and performance-based progression.The study captures interactions between human factors, learning design, and material constraints in professional learning environments. The findings in this study contribute to the conceptual development of training effectiveness, by framing end terms as a formal qualification standard and a negotiated and context-dependent construct, shaped by social and organizational conditions in complex work settings where failure has serious consequences.

Do Written Plans Reflect the Transfer for Planning Competence?

Keywords: Competencies, Instructional design, Qualitative methods, Reflection

Presenting Author:Agnès Deprit, Université du Québec à Montréal (UQAM), Canada

Planning is a core teacher competency. It involves anticipating the didactic management of learning activities to be conducted in class (Deprit, 2023) and is often recorded in a plan (Scheepers, 2016). Planning increases the likelihood of implementing effective teaching practices (Barbier, 2026), thereby contributing to teaching quality (Hattie, 2009) and pupil learning.During teacher training, internships provide an opportunity to apply this professional competence in a real work context. However, for students, the task is not simple. Although university instructors provide replicable or easily transferable teaching/learning models, future teachers often struggle to transfer what they have learned to the specific context of their internship (Caron & Portelance, 2017). This transfer appears to rely on their personal understanding of the task's expectations. A previous study identified four conceptions of planning, each shaping how students understand and carry out the task: no meaningful understanding (profile 1), filling in a document (profile 2), creating their own lesson (profile 3), and reflecting on pupils' activity (profile 4) (Deprit et al., 2022).We therefore asked whether students with different understandings of planning transfer the expected competence differently in their written lesson plans.To explore this question, we analyzed written lesson plans from 12 final-year teacher education students in French-speaking Belgium, categorized according to the four pre-established planning profiles. Preliminary content analysis (L'Écuyer, 1990) indicates that the transfer of planning competence depends on the students' underlying conception, which is reflected in the written work. These findings suggest avenues for both practice and further research.

Towards More Effective Transfer of Training Interventions: The Role of Intervention Intensity

Keywords: Life-long learning, Motivation, Transfer of learning, Workplace learning

Presenting Author:Bastian de Jong, University of Amsterdam, Netherlands; **Co-Author:**Joost Jansen in de Wal, University of Amsterdam, Netherlands

Abstract Despite heavy investments made in employee trainings, transfer of training is often lower than desirable and interventions designed to support transfer of training often have minor effects. This might be explained by the short duration of most interventions and intervention effects might be moderated by training enrolment type (i.e., mandatory or voluntary). In this study, we explored effects of intensifying a transfer of training intervention on transfer motivation and transfer of training and whether enrolment type moderates intervention effects. We divided participants ($N = 396$) into a control group, a goal-setting group and a

more intensive goal-setting plus relapse prevention group. Participants indicated their transfer motivation at the end of the training, and indicated transfer motivation, transfer quantity and quality after six and twelve weeks. Outcomes showed positive effects of both interventions on transfer motivation types directly after the training and transfer of training after six weeks, but effects did not sustain after twelve weeks. Additionally, intensifying an intervention did not result in more positive effects, nor did enrolment type moderate intervention effects. Our outcomes provide a nuanced view on transfer of training intervention effectiveness and directions for how effects of transfer of training interventions could be sustained.

How do trainers' qualifications and work interact and influence their transfer knowledge?

Keywords: Competencies, Life-long learning, Teacher/trainer professional development, Transfer of learning

Presenting Author: Susanne Wisshak, RPTU University Kaiserslautern-Landau, Germany; **Presenting Author:** Bastian de Jong, University of Amsterdam, Netherlands; **Co-Author:** Alisha Koch, RPTU University Kaiserslautern-Landau, Germany

Although trainers play an important role in the extent to which employees transfer training content towards practice (i.e., transfer of training), little research has been done with regard to trainers' knowledge about transfer. It also remains unclear how trainers' qualifications and experience interact with characteristics of their work and to what extent those predict trainers' transfer knowledge. In this quantitative research we investigated how trainers' transfer knowledge is related to their qualifications, their teaching experience and the training content which they predominantly teach and how these characteristics interact with one another. The study was conducted in Germany and comprised 432 trainers who responded to an assessment instrument regarding three dimensions of transfer knowledge namely, knowledge about learner characteristics, training design and learners' work environment. Results suggest that having a pedagogical/psychological degree was a positive predictor of transfer knowledge about training design and transfer knowledge about learners' work environment. In addition, holding a train-the-trainer certificate and training experience in years were positive predictors of transfer knowledge about learners' work environment. Unexpectedly, the number of training days per year negatively predicted transfer knowledge about training design. Finally, training content seems to moderate the relationship between trainers' training days per year and their transfer knowledge. These findings provide fine grained insights into what predicts transfer knowledge among trainers and whether train-the-trainer courses should be tailored to specific types of trainers.

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M104

Single Paper

Higher Education, Learning and Social Interaction, Lifelong Learning

Learning Across Health and Work-Based Contexts

Keywords: Adult education, Artificial Intelligence, Competencies, Ethnographic methods, Mixed-method research, Quantitative methods, Self-regulated learning and behaviour, Simulation-based learning, Social interaction, Teacher/trainer professional development, Teamwork, Work-based learning, Workplace learning

Interest group: SIG 14 - Learning and Professional Development

Chairperson: Kristiina Räihä, Häme University of Applied Sciences, Finland

Evaluating learning in simulation-based health education. The multivoiced expertise of educators

Keywords: Ethnographic methods, Simulation-based learning, Social interaction, Teacher/trainer professional development

Presenting Author: ASTRID CAMILLA WIIG, Norwegian Police University College, Norway; **Co-Author:** Roger Saljo, University of Gothenburg, Sweden

This study explores the evolution of educators' professional expertise while monitoring, evaluating and assessing student learning in simulation-based education (SBE). Drawing on sociocultural and dialogical theorizing, we examine how twelve educators analyse, assess and articulate student learning in this performative setting. Conducted as an interactional ethnography in undergraduate nursing SBE, the study involved 15 hours of video recordings alongside complementary data. Our iterative qualitative analysis, informed by Rooney and Boud's (2019) concept of expertise as the capacity to "read" professional activities, identified three overlapping modes of expertise. We describe these in terms of the presence of three distinct voices (Bakhtin, 1986): a) the voice of clinical expertise, focusing on the care provided and its relevance; b) the voice of pedagogy/instruction, addressing student learning and assessment; and c) the voice of simulation expertise, attending to the functionality of the simulation and scenarios. We argue that professional expertise in an instructional setting of this kind does not emerge through appropriating a singular voice or perspective. Rather, expertise is *multivoiced* and emerges through the capacity to invoke different kinds of considerations relevant for conducting simulations and making judgements about learning and instruction in a technologically saturated environment.

Recognising 'connective labour' in the care experience of medical abortion patients via telemedicine

Keywords: Artificial Intelligence, Mixed-method research, Work-based learning, Workplace learning

Presenting Author: Koula Charitonos, The Open University UK, United Kingdom; **Co-Author:** Kathryn Piper, British Pregnancy Advisory Service, United Kingdom; **Co-Author:** Nicole Gray, British Pregnancy Advisory Service, United Kingdom; **Co-Author:** Chloe Hanse, British Pregnancy Advisory Service, United Kingdom; **Co-Author:** Patricia Lohr, British Pregnancy Advisory Service, United Kingdom; **Co-Author:** Lesley Hoggart, The Open University UK, United Kingdom; **Co-Author:** Carrie Purcell, The Open University UK, United Kingdom

This paper presents findings from a study that examined staff and patient views on the potential for introduction of an AI 'chatbot' within a medical abortion care pathway, as offered by a leading provider in the UK. Central to the inquiry was to understand and map the practice of *abortion aftercare*. By drawing on a practice approach (Schatzki, 2001) as a lens through which to analyse human activity and the organisation of the contexts in which people act, and applying the 'Interview to the Double' technique (Nicolini, 2009), we conducted interviews with staff (n=14). The aim was to make staff's knowledge about local routines and workarounds visible and legitimate, and gather rich, situated accounts of everyday practice. The thematic analysis reveals forms of work that were hidden or not recognised as formal work, yet essential to technological infrastructures of the service. In the paper, we will highlight 'connective labour' (Pugh, 2024), a way of connecting with, or creating relationships with, patients and colleagues that appears central to professional work within abortion aftercare. We argue that it deserves more attention as it is at risk of being thinned out by automated systems, without a real appreciation of what makes it effective within healthcare provision.

Impact of a collaboration training on medical students' competence in trauma care

Keywords: Competencies, Quantitative methods, Simulation-based learning, Teamwork

Presenting Author: Lotta Tikkanen, University of Helsinki, Finland; **Co-Author:** Henrika Anttila, University of Helsinki, Finland; **Co-Author:** Niklas Pakkasjärvi, University of Turku, Finland; **Co-Author:** Kirsi Pyhältö, University of Helsinki, Finland

Effective trauma care relies heavily on teamwork, with many preventable errors arising from failures in collaboration rather than clinical knowledge. This study investigates the impact of structured teamwork training on medical students' trauma management skills, emphasizing the importance of both clinical and non-technical skills in trauma simulations. A clustered controlled trial was conducted with 113 fourth-year medical students from a Finnish university, divided into intervention and control groups. The intervention group engaged in a one-day trauma simulation, utilizing the ABCDE approach and Guidelines for Collaboration in Trauma, while the control group followed the same protocol without these guidelines. Pre- and post-surveys assessed self-efficacy in trauma management and teamwork skills. Results indicated that the intervention group reported significantly higher self-efficacy in trauma management post-intervention ($F(1, 107) = 4.16, p = .044$) and rated their team performance more favorably ($m=5.53$) compared to the control group ($m=4.38, t(108)=-8.11, p < .001$). However, no significant differences in teamwork skills were observed. These findings underscore the potential of structured teamwork training to enhance self-efficacy and perceived team performance in trauma care, highlighting the need for intentional integration of teamwork skills in medical education to better prepare students for real-world clinical challenges.

Bridging Work and Learning: The Conditional Role of Self-Regulatory Readiness in Residency

Keywords: Adult education, Self-regulated learning and behaviour, Work-based learning, Workplace learning

Presenting Author: Roel Huijsmans, UMC Utrecht, Netherlands; **Co-Author:** Marije Lesterhuis, UMC Utrecht, Netherlands; **Co-Author:** Gersten Jonker, UMC Utrecht, Netherlands; **Co-Author:** Marieke de Waal, UMC Utrecht, Netherlands; **Co-Author:** Reinier Hoff, UMC Utrecht, Netherlands

Introduction Learning experiences of residents in training for a medical specialty are embedded in daily work and social interactions. To navigate residency successfully, residents must recognize and utilize clinical activities as learning opportunities through self-regulation of learning. Self-regulatory readiness, consisting of being alert for learning, questioning one's competence, awareness of learning needs, awareness of how and when learning may occur, and recognizing learning opportunities, may act as a bridge between daily work and intentional self-regulated workplace learning. This study explores the role of residents' self-regulatory readiness and how supervisors support or thwart it using a theoretical framework of self- and co-regulation of learning. Methods We conducted semi-structured duo-interviews with residents and supervisors across diverse specialties in the Dutch healthcare system. Data were analyzed using reflexive thematic analysis. Results Residents engaged in all self-regulatory readiness strategies, which fluctuated during residency and were shaped by personal and contextual factors. In brief but meaningful 'readiness conversations', residents and supervisors aligned perceptions of self-regulatory readiness,

learning goals and clinical responsibilities, positioning work as learning. Supervisors supported residents' workplace learning by monitoring self-regulatory readiness, aligning supervision and entrustment with residents' self-regulatory readiness and learning goals, and through external regulation when necessary. Conclusion Self-regulatory readiness functions as a dynamic and conditional bridge between perceiving and utilizing clinical work as workplace learning, enabling residents' workplace learning to become deliberate rather than implicit or reactive. Supervisors support residents' workplace learning by monitoring, co-regulating, and, when needed, externally regulating self-regulatory readiness strategies.

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M2

Single Paper

Higher Education, Instructional Design

Technology-Enhanced Learning for Professional Development

Keywords: Attitudes and beliefs, Communities of learners and/or practice, Design-based research, Informal learning, Instructional design, Instructional strategies, Mentoring and coaching, Motivation, Qualitative methods, Social aspects of learning and work, Technology-enhanced learning, Work-based learning, Workplace learning

Interest group: SIG 14 - Learning and Professional Development

Chairperson: Minna Silvennoinen, JAMK University of Applied Sciences, Finland

FIDEMM: An Evidence-Based Design Framework for Effective Microlearning at the Workplace

Keywords: Instructional design, Instructional strategies, Technology-enhanced learning, Workplace learning

Presenting Author: Friederike Lindauer, Brandenburg University of Applied Sciences and Bremen University, Germany; **Co-Author:** Katharina Frosch, Brandenburg University of Applied Sciences, Germany

Even though microlearning has been investigated for quite some time (1950s), there is still a lack of consensus on how microlearning should be designed most effectively – in general, and particularly if it is used for workplace learning. In the past decade, microlearning has emerged as a viable approach for workplace learning, delivering content in short, focused units that are can be easily integrated into work processes and may be accessed on demand if immediate work tasks demand it. This is especially relevant given the limited connection between traditional training formats and real work practices, and the very small amount of time employees spend in formal training—only about 1% of their workweek (Bersin, 2018). In this paper, we contribute to closing this gap and we propose the Foundational Instructional Design Model for Microlearning (FIDEMM), a framework designed to improve instructional design and learning outcomes in workplace settings. Grounded in Gagné's 9 Events of Instruction and informed by recent microlearning literature, FIDEMM incorporates principles of cognitive load theory, learning transfer, self-regulated learning, and situated cognition. This model provides practical guidance for practitioners, trainers, and educators in developing effective microlearning units that seamlessly connect learning and work experiences.

The influence of work characteristics on employees' attitudes towards online learning in CVET

Keywords: Attitudes and beliefs, Technology-enhanced learning, Work-based learning, Workplace learning

Presenting Author: Eveline Wuttke, Goethe-Universität Frankfurt, Germany; **Co-Author:** Susan Seeber, Georg-August-University of Göttingen, Germany; **Co-Author:** Philine Krebs, Georg-August-University of Göttingen, Germany

Technological developments in the labor market and demographic change pose increasing challenges for continuing vocational education and training (CVET). Self-directed and online-based learning is gaining importance, as it allows flexible learning independent of time and place. The present study draws on the Technology Acceptance Model (TAM) and analyzes the influence of attitudes on informal e-learning and the use of digital media at work among 2,600 employees. Results confirm the applicability of TAM to employees' attitudes towards e-learning. Moreover, various organizational and individual factors exert significant positive effects on both attitudes toward e-learning and the use of digital media at work.

Professional development of stockpeople learning to work in higher welfare Danish pig production.

Keywords: Communities of learners and/or practice, Design-based research, Informal learning, Workplace learning

Presenting Author: Ashley Norval, Wageningen University and Research Centre, Denmark; **Co-Author:** Perry den Brok, Wageningen University and Research Centre, Netherlands; **Co-Author:** Vivi Aarestrup Moustsen, SEGES Innovation, Denmark; **Co-Author:** Renate Wesselink, Wageningen University, Netherlands

Minimal confinement of lactating sows has been legislated in Denmark from 1 January 2026, with these changes to housing requiring a different skill set of stockpeople working within the farms and may also pose greater risk to their safety. Very limited knowledge exists on how to support the professional development of stockpeople to learn to work in these systems. The implementation of effective pig husbandry strategies requires attention in farmer access to vocational training tools for their stockpeople. A small number of farms in Denmark have already transitioned to the new housing requirement- with learning from the experiences of these early adopter farms important to understanding how to support further farms, more specifically the stockpeople working within them, to make the transition. This leads to the central research question of this study- how is the professional development of stockpeople currently approached to facilitate their learning at an early adopter farm workplace? Data was collected from nine case study farms that had already transitioned to minimal confinement production using a four-phase methodology developed based on Participatory Action Research principles. The preliminary analysis identified a major trend of a common approach to the professional development of stockpeople, whereby on individual farms, inexperienced stockpeople would learn from an experienced peer, in addition to the formation of learning communities between stockpeople on different farms. Knowledge on how to support the professional development of stockpeople is intended to contribute to the successful transition to higher welfare pig production for all farms in Denmark.

Bridging Theory and Practice: Insights from Engineering Students Internship Experience

Keywords: Mentoring and coaching, Motivation, Qualitative methods, Social aspects of learning and work

Presenting Author: Alicia Jane Peras, University of Arizona, United States; **Presenting Author:** Qian Wang, University of Arizona, United States; **Presenting Author:** Erica Dagnino, University of Arizona, United States; **Presenting Author:** Adriana Cimetta, University of Arizona, United States; **Presenting Author:** Dean Papajohn, University of Arizona, United States; **Presenting Author:** Tyler Le Peau, University of Arizona, United States

Drawing on students' perspectives, this study explored learning-work integration from a 10-week internship program for first-year Civil Engineering students in the United States. Semi-structured interviews and focus group discussions (FGDs) were conducted each August with students from the 2023 and 2024 cohorts after they completed their summer internships. Positioned at the intersection of academic learning and professional practice, the program intentionally integrated authentic engineering tasks with structured mentoring to support students' early development. Thematic analyses revealed three interconnected themes: (1) development of engineering identity through practical engagement and mentor guidance; (2) cultivation of belonging through academic and workplace communities; and (3) building resilience through skill acquisition, error tolerance, and supportive mentorship. Findings indicate that students valued hands-on engagement in real-world engineering work, which fostered resilience by normalizing challenges and encouraging reflection. Guidance from academic and workplace mentors further supported skill transfer between classroom and workplace contexts. Together, these processes helped students envision themselves as engineers and feel connected to both academic and professional communities. The findings illustrate how well-designed early internship environments, from students' perspectives, can bridge theory and practice by aligning learning and work processes, ultimately fostering persistence and supporting retention and success among first-year engineering students.

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M103

Roundtable

Higher Education, Learning and Social Interaction, Lifelong Learning

Professional Identity, Agency and Learning Environments

Keywords: Curriculum development, Development, Learning environments, Professional identity, Qualitative methods, Quantitative methods, Review study, Self-efficacy, Vocational education and apprenticeship training

Interest group: SIG 14 - Learning and Professional Development

Chairperson: Josef Strasser, Germany

The development of students' vocational narratives during VE programs in the economic domain.

Keywords: Development, Professional identity, Qualitative methods, Vocational education and apprenticeship training

Presenting Author:Kathinka van Doesum, Open University of the Netherlands, Netherlands; **Co-Author:**Ilya Zitter, Hogeschool Utrecht (University of Applied Sciences Utrecht), Netherlands; **Co-Author:**Elly De Bruijn, Open Universiteit Nederland, Netherlands

Senior secondary vocational education in the Netherlands prepares students for vocational practice, further education, and citizenship, and includes the development of a vocational identity. Forming a vocational identity can be challenging, as many students, particularly in the economic domain, enter their programs with unclear vocational images and limited commitment. From a sociocultural perspective, vocational identity formation is a participatory process of belonging, becoming, and being, which develops through increased engagement in a vocational community, by making meaning and sense of experiences. Across multiple vocational settings, students construct personal vocational narratives that synthesize experiences over time and reflect goals, intentions, and meanings within the collective narrative of the vocational community. Because vocational identity formation is socially embedded and subjective, it is best studied from students' perspectives using narrative inquiry and longitudinal individual interviews, which require sustained researcher-participant relationships. This longitudinal multiple-case study addresses the research question: How do students in the economic domain develop vocational narratives during vocational education programs? To capture this development over time, repeated in-depth interviews are conducted with at least 10 students from 2024 through 2027. Deductive and inductive analyses identify shared themes of vocational identity, and preliminary findings confirm earlier research that many students in the economic domain enter their programs without clear vocational images or expectations. The round table will focus on the methodological issue of how researchers can overcome participants' tendency to emphasize recent or immediate experiences, in order to elicit broader, richer narratives that capture earlier and less prominent influences.

Defining and contextualizing responsive vocational and higher education: a concept analysis

Keywords: Curriculum development, Qualitative methods, Review study, Vocational education and apprenticeship training

Presenting Author:Wietske Kuijer, HAN University of Applied Sciences & Radboudumc, Netherlands; **Co-Author:**Anne Khaled, HAN University of Applied Sciences, Netherlands

Across Europe and internationally, vocational education and training (VET) and higher education are increasingly expected to respond to rapid technological developments, shifting labour-market demands, and broader societal transitions. As a result, the concept of responsiveness has gained prominence in policy and research yet remains theoretically underdeveloped and inconsistently defined. While policy documents such as the Herning Declaration and international frameworks from UNESCO and the OECD emphasize the need for adaptive, future-oriented VET systems, empirical and conceptual clarity is still lacking. Pilot interviews with education professionals (n = 12) confirmed this ambiguity, revealing that although the concept is often unfamiliar, the underlying idea of education attuned to contextual and student needs is widely recognized as important. To advance conceptual understanding, we conducted a Rodgers' evolutionary concept analysis of responsive vocational and higher education. A systematic literature search across ERIC, Web of Science, and Academic Search Ultimate (1,657 records) resulted in 118 articles meeting the inclusion criteria. These were analyzed to identify antecedents, attributes, surrogate terms, examples, and consequences, allowing overarching themes to emerge. During the round table, we present preliminary findings and invite participants to interpret these results from diverse national perspectives. Insights from this session will help refine the conceptual understanding and identify opportunities for international collaboration in strengthening responsive vocational and higher education systems.

Learning organization and self-efficacy in youth care: being both expert and learner

Keywords: Learning environments, Qualitative methods, Quantitative methods, Self-efficacy

Presenting Author:Lara Wullemans, University of Amsterdam, Netherlands; **Co-Author:**Marija Maric, University of Amsterdam, Netherlands; **Co-Author:**Aurelie Lange, University of Applied Sciences Amsterdam, Netherlands

This work-in-progress round-table contribution explores how youth care professionals experience their organizations as learning environments, and how this relates to their occupational self-efficacy. Quantitatively, we draw on survey data from three Dutch youth care organizations participating in an improvement project. The experienced learning organization is measured with a DLOQ-based scale, and occupational self-efficacy with the OSES, alongside demographic variables (age, years of experience). Initial regression analyses show a positive bivariate association between the learning organization and self-efficacy; however, this relationship attenuates and becomes non-significant once age and work experience are included in the model. This raises conceptual and methodological questions about how to understand the interplay of organizational conditions and professional seniority in relation to self-efficacy. In parallel, we conduct semi-structured interviews with youth care professionals using an interview guide that focuses on how they experience their organization as a learning environment, and how this environment is related to their ability to be both "expert" and "learner", including their room to voice uncertainty in high-stakes work. The interview protocol was developed prior to the quantitative findings and does not specifically target age or career stage; instead, it addresses everyday experiences of learning, vulnerability and responsibility. Thematic analysis is ongoing. In the round table, we will present our mixed-methods design, the quantitative puzzle around the disappearing association between the learning organization and self-efficacy, and emerging qualitative themes on being both expert and learner, and invite discussion on how to connect these strands analytically.

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M5

Single Paper

Lifelong Learning, Motivational, Social and Affective Processes, Teaching and Teacher Education

Leadership, Innovation and Professional Learning

Keywords: E-learning/online learning, Leadership, Life-long learning, Motivation, Quantitative methods, Secondary education, Self-determination, Teacher/trainer professional development, Teamwork, Workplace innovation, Workplace learning

Interest group: SIG 14 - Learning and Professional Development

Chairperson: Ilya Zitter, Hogeschool Utrecht (University of Applied Sciences Utrecht), Netherlands

Why do Trainees become Agile? The Meaning of Workplace Task Characteristics and Need for Cognition

Keywords: Leadership, Motivation, Quantitative methods, Workplace learning

Presenting Author:Alexander Brodsky, University of Konstanz, Germany; **Co-Author:**Steffen Wild, TU Dortmund University, Germany; **Co-Author:**Ernst Deuer, Baden-Wuerttemberg Cooperative State University Ravensburg, Germany

Developing employability skills is crucial for effective engagement in today's dynamic labour market. Workplace learning processes are seen as particularly influential in supporting this development. This study explores how specific work task characteristics impact agility, considering the mediating influence of an individual's need for cognition within the self-regulation framework. A cross-sectional approach was used to analyse data from 155 first-year trainees enrolled in commercial vocational education and training programs in Germany using structural equation modelling. The findings provide preliminary evidence that the need for cognition is an important mediating variable between various aspects of work task design—such as autonomy, task relevance, and complexity—and the development of agility. These insights emphasise the importance of assigning challenging and meaningful tasks to apprentices during their initial training period, as well as highlighting the motivational factors that foster adaptability in emerging professionals.

Promoting the Innovation of Teaching Practices from Middle Leadership: Emerging Challenges

Keywords: Leadership, Teamwork, Workplace innovation, Workplace learning

Presenting Author:Monica Guerrero, University of Barcelona, Spain; **Co-Author:**Marta Minguela, University of Barcelona, Spain; **Co-Author:**Javier Onrubia, University of Barcelona, Spain

Middle leaders have been recognized as crucial facilitation figures that can promote productive collaboration among teachers during school-based team meetings. However, this kind of facilitation can entail dealing with important challenges, particularly when the school is involved in processes of innovation. This study aims to deepen our understanding of these challenges by analyzing a series of weekly regular "coordination meetings" between six team-level coordinators at a primary school which developed innovative teaching practices aimed at supporting inclusion. These coordination meetings were primarily focused on joint discussion, reflection and decision-making about the development of the innovative teaching practices in the school. Eleven coordination meetings were audio/video recorded, and interviews with the participants were conducted at the end of this period. Data analysis aimed at identifying the main topics addressed during the meetings, and the coordinators' views of these meetings. Based on this analysis, some challenges, of a dilemmatic nature, that coordinators faced when leading teacher collaborative processes for innovation are being identified. Preliminary results suggest the relevance of at least two of these challenges: i) the balance between focusing on urgent logistical, organizational issues vs. focusing on pedagogical reflection and decision-making on teaching practices, and ii) the balance between focusing on particular issues from each grade/level vs. prioritizing broader issues at the school-level. These results are of interest for improving middle leaders' specific training and for providing them with support to facilitate productive teacher collaboration that results in teacher learning and aimed at supporting the development of innovative teaching practices.

Information Security Culture and Leadership Behavior: An SEM Analysis of Motivational Mediation

Keywords: Leadership, Motivation, Self-determination, Workplace learning

Presenting Author: Verena Zengerle, Universität Hohenheim, Professorship for Business Education, Germany; **Co-Author:** Julia Warwas, Universität Hohenheim, Professorship for Business Education, Germany; **Co-Author:** Thomas Keller, University of Hohenheim, Germany

The increasing complexity of digital transformation and organizational systems has made information security culture (ISC) a critical concern, especially for small and medium-sized enterprises (SMEs). ISC can be conceptualized as part of the organizational "context for professional learning and development," shaping how employees acquire, interpret, and apply security-related knowledge into work. ISC promotes compliance with organizational information security policies (ISPs) and encourages continuous learning and adaptive behavior by integrating security-related norms, expectations, and values into organizational processes. Leadership plays a central role in shaping ISC by influencing employees' motivations to comply with policies, such as personal commitment and perceived obligation. Despite recognition of this relationship, a research gap remains regarding how specific leadership behaviors affect the implementation and enforcement of ISPs. Research on professional learning offers Self-Determination Theory (SDT) as a well-established and empirically validated framework to address this gap. By differentiating qualitatively distinct forms of motivation, SDT is suited to analyzing sustainable, self-endorsed security-compliant behavior. This study examines leadership behavior as a predictor of employees' intention to comply with ISPs and analyzes the mediating role of motivational regulation. A mediation model based on SDT and the behavioral approach was tested using structural equation modeling on data from a cross-sectional survey of 225 employees. The results show that relationship-oriented behavior positively influences compliance intention, while task-oriented computer monitoring affects intention only indirectly through introjected motivation. These results highlight the importance of distinct motivational mechanisms through which leadership behaviors influence compliance and provide insights into the development of effective security measures.

Towards online instruction: Teachers' experiences, perceptions and professional development needs

Keywords: E-learning/online learning, Life-long learning, Secondary education, Teacher/trainer professional development

Presenting Author: Maaïke Grammens, Ghent University, Belgium; **Co-Author:** Astrid Parmentier, University Ghent, Belgium; **Co-Author:** Bram De Wever, Ghent University, Belgium

This study examines in service secondary education teachers' experiences, perceptions, and professional development needs related to online teaching, both in synchronous environments (e.g. through videoconferencing) and asynchronous environments (e.g. through learning management systems). The aim was to identify teachers' experiences, perceptions, and professional development needs, in order to provide targeted professional development to enhance their proficiency in online teaching and instruction. Data were collected through a survey completed by 88 Flemish teachers. The results show that only a small proportion of respondents reported to be teaching online frequently, either asynchronously (19.3%) or synchronously (20.4%), or a combination of both (13.6%). Although these proportions are relatively limited, most teachers, including those who are not currently engaged in online instruction, perceive online teaching as relevant and beneficial in specific educational contexts. At the same time, teachers report several challenges, particularly with engaging and motivating pupils in online environments and facilitating interaction and communication. Teachers indicate that support from colleagues, their school, and online training opportunities would help them feel more confident and effective in online teaching. To conclude, the findings underscore the need for targeted professional development focusing on the design and implementation of instructional strategies, and the organisation of online courses.

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Hall

Poster Presentation

Assessment and Evaluation, Higher Education, Instructional Design, Learning and Instructional Technology, Learning and Social Interaction, Lifelong Learning, Motivational, Social and Affective Processes, Teaching and Teacher Education

Poster Session: Emerging Perspectives on Learning and Professional Development

Keywords: Adult education, Artificial Intelligence, Assessment methods, Attitudes and beliefs, Career development, Citizenship education, Cognitive skills, Collective learning, Communities of learners and/or practice, Competencies, Curriculum development, Design-based research, Development, Digital literacy, Emotion and affect, Ethnographic methods, Feedback, Inclusion, Informal learning, Instructional design, Leadership, Leadership development, Learning approaches, Learning environments, Learning technologies, Life-long learning, Longitudinal studies, Mentoring and coaching, Mixed-method research, Motivation, Professional identity, Qualitative methods, Quantitative methods, Reflection, Review study, Secondary education, Self-concept, Simulation-based learning, Social aspects of learning and work, Social interaction, Sustainable development, Teacher/trainer professional development, Teamwork, Technology-enhanced learning, Vocational education and apprenticeship training, Work-based learning, Workplace innovation, Workplace learning

Interest group: SIG 14 - Learning and Professional Development

Educational diversity in elementary school teacher teams

Keywords: Professional identity, Qualitative methods, Teamwork, Workplace innovation

Presenting Author: Rebecca Kahmann, Erasmus University Rotterdam, Netherlands; **Co-Author:** Heleen van Mierlo, Erasmus University Rotterdam, Netherlands; **Co-Author:** Lonneke de Meijer, Erasmus University Rotterdam, Netherlands

Due to a high teacher shortage in elementary education, the Dutch government supports a variety of routes to the teaching profession. This leads to more diverse teacher teams. In the absence of research on the topic, it is as yet unclear how teachers and school directors experience different levels of educational diversity in their team and with what consequences. Research on team diversity in work and organization psychology suggests that team performance outcomes can benefit from diversity in teams. However, team diversity also carries the risk of social conflicts. Some studies suggest that teachers might also leave the school or even their profession as a result of such social conflicts. In this study, we aim to explore how different stakeholders in elementary school teams experience educational diversity in their teams, the consequences thereof and which factors possibly contribute to the experienced consequences. We will conduct a multiple-case study in which we interview various stakeholders (teachers and teaching assistants with different educational backgrounds and school leaders). The cases will be school teams with different levels of educational diversity in their team. We look forward to share first results of the interviews during the conference.

Clinical teaching in nursing: A scoping review of predictors, instructional practices and outcomes

Keywords: Review study, Vocational education and apprenticeship training, Work-based learning, Workplace learning

Presenting Author: Roman Höhl, University of Kassel, Germany; **Co-Author:** Michael Goller, University of Kassel, Germany

Workplace-based learning is a central component of vocational education, particularly in nursing education, where clinical teaching by qualified nurse preceptors (also referred to as clinical instructors or educators) plays a key role in supporting learners' professional development (Attenborough et al., 2019; Billett, 2001; Flott & Linden, 2016). Despite its practical relevance, research on clinical teaching in nursing remains conceptually fragmented, with heterogeneous theoretical perspectives, methodological approaches, and outcome measures (Jokelainen et al., 2011; McSharry & Lathlean, 2017). Against this background, this scoping review aims to systematically map the research landscape on clinical teaching in nursing education. The review is informed by perspectives from workplace learning and professional development, including concepts such as agency, beliefs, and self-efficacy (Billett, 2001; Bandura, 1997). Following PRISMA-ScR guidelines (Tricco et al., 2018), a systematic scoping review is currently being conducted. Data extraction and analysis are guided by a deductively developed coding framework capturing study characteristics, theoretical references, modes of instructional practices, contextual predictors, and reported outcomes for learners and educators (Arksey & O'Malley, 2005; Levac et al., 2010). As the review is ongoing, preliminary insights show a diverse but weakly integrated body of research ($k \approx 60$), with a stronger emphasis on relational and situational aspects of clinical teaching and comparatively limited attention to organisational or distal predictors. Methodologically, qualitative and cross-sectional designs appear to dominate, while longitudinal and process-oriented approaches remain rare. The completed review is expected to identify key research gaps and inform subsequent mixed-methods studies on learning and professional development in and through work.

Redefining soft skills in the context of Artificial Intelligence in the field of engineering

Keywords: Adult education, Artificial Intelligence, Competencies, Learning environments

Presenting Author: Marjan Babaie, University of Antwerp, Belgium; **Co-Author:** David Gijbels, University of Antwerp, Belgium

The rapid growth of artificial intelligence in both education and industry is changing the landscape of engineers' soft skills, highlighting the need to review and redefine these skills. Currently, there is no clear consensus on how engineering soft skills are redefined in the context of the omnipresence of artificial intelligence, nor on which new soft skills are required for engineering in AI-enabled environments. Therefore, through a systematic literature review, this study seeks to identify, categorize, and redefine engineering soft skills in the era of artificial intelligence. The PRISMA methodology will be employed to systematically extract relevant soft skills from the existing literature. The findings of this study are expected to propose a comprehensive framework for redefining engineering soft skills in the Context of Artificial Intelligence and to provide practical guidance for updating educational programs that align with the evolving demands of the future workforce.

Continuous Learning in Working Life (CLWL) Research Group

Keywords: Informal learning, Life-long learning, Workplace innovation, Workplace learning

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Continuous learning plays a central role in the development of adults' competences and careers, as well as in organizational renewal, innovation, and the promotion of ethical working life. The Continuous Learning in Working Life (CLWL) Research Group examines learning at work, professional competence, well-being, and innovation as interconnected features of everyday working life and organizational practices. The group aims to deepen understanding of adult learning in the contexts of work, work-related education and training, and transitions within and into working life, and to explore the meanings and consequences of learning for both individuals and organizations. CLWL conducts mixed-method research, combining qualitative interview, observational, and diary data with quantitative survey data, in collaboration with Finnish work organizations and educational institutions across the private and public sectors. The research projects of the CLWL focus on learning and professional competence across careers and organizations; creativity, innovation, and organizational development; psychological safety, self-directedness, and self-leadership skills; community, ethics, and well-being at work; and the leadership of learning through coaching-oriented supervisory practices. The objectives of the group's research are threefold. *First*, the group examines how learning at work, competence, and creativity are manifested and supported in workplaces and during transitions in working life. *Second*, it investigates their relationships with well-being, strategic change, innovation, career development, and organizational leadership. *Third*, the group develops tools, methods, and evidence-based recommendations to support learning at work, employee-driven innovation, and the leadership of learning and well-being.

Systematic patient observation in nursing: An interview study on visual expertise

Keywords: Cognitive skills, Competencies, Qualitative methods, Workplace learning

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The demographic shift towards an ageing population increases healthcare demands while intensifying workforce shortages, particularly in nursing. At the same time, the disease spectrum is moving from infectious to chronic conditions, heightening the need for high-quality nursing practice. Central to such practice is systematic patient observation—the structured assessment of patients' physical, psychological, and social states—which forms the foundation for planning and evaluating nursing interventions. Despite its importance, systematic observation has received limited empirical attention. This study explores systematic patient observation through the lens of visual expertise and situational awareness, two core cognitive mechanisms underpinning expert performance. Visual expertise enables professionals to identify relevant cues rapidly and accurately, while situational awareness supports the comprehension and anticipation of changes in complex environments. Together, these processes explain how expert nurses perceive, interpret, and act upon visual information during care. A qualitative design is employed, using semi-structured interviews with practical nursing instructors. Applying the Critical Incident Technique, participants will describe challenging care situations and reflect on how visual information guides their actions and teaching. The data is analysed using qualitative content analysis. The findings aim to deepen theoretical understanding of systematic patient observation and identify key contextual and visual factors influencing expert nursing practice. These results are planned to inform a future eye-tracking study, which will contribute to the development of evidence-based approaches to training visual expertise in nursing education.

Designing for organisational development: Integrating Artificial Intelligence in higher education

Keywords: Artificial Intelligence, Design-based research, Instructional design, Teacher/trainer professional development

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Higher education institutions are undergoing rapid organisational development driven by technological change and the expanding use of Artificial Intelligence (AI) in both educational practice and administration. This expansion presents significant challenges and highlights the need for purposeful staff professional development. While professional development can be ad hoc and individually driven, AI-related competence development increasingly requires a strategic, organisation-wide approach that aligns teacher professional development with institutional goals. This paper examines the project Frontline application of AI and Technology-enhanced learning in Higher education (FAITH), an organisational development initiative designed to support the integration of AI into higher education teaching through a design-based research approach. The study addresses two research questions: (1) how an organisational development project for implementing AI in educational operations can be designed, and (2) how teachers perceive such a project. FAITH is structured through a steering group and a project group involving study program managers, educational technology experts, and researchers, who support teacher teams in iterative course redesign processes. Teachers also participate in a professional development course in AI in education and AI literacy to inform their course development work. Preliminary findings suggest that combining top-down strategic leadership with bottom-up teacher ownership strengthens both professional learning and organisational change. How the integration of AI in professional development for teachers is designed will have an impact on individual professional development, but more importantly, on the organisational development of higher education.

Occupational competence and occupational commitment: the induction phase of ECEC teachers

Keywords: Competencies, Mentoring and coaching, Qualitative methods, Teacher/trainer professional development

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Abstract There is a shortage of qualified early childhood education and care (ECEC) teachers, while at the same time competence requirements for ECEC teachers have increased. Research shows that highly educated ECEC teachers experience, for example, a conflict between their working conditions and professional ideals, which can undermine their occupational commitment and increase their intentions to leave the profession. This study explores how ECEC teachers in the induction phase perceive the relationship between occupational competence and occupational commitment. The data were collected through a survey in Finland ($N = 595$), focusing on one open-ended question answered by 222 participants. The study was conducted inductively using qualitative thematic analysis. The findings revealed four interconnected themes: appreciation, position in the work community, demands and resources, and competence in the induction phase. These themes illustrate how occupational competence and occupational commitment are intertwined at the societal, communal, and individual levels. The results highlight tensions between formal education, job demands, and actual competence, as well as the importance of support and autonomy in the early career stages. The study provides practical implications for ECEC teacher education, workplace practices, and policy development to better support teachers during the induction phase and strengthen their occupational commitment.

Who makes the call who takes the call: learning from everyday clinical activities

Keywords: Ethnographic methods, Informal learning, Vocational education and apprenticeship training, Workplace learning

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Medical students are expected to learn under supervision, often provided by residents, in a context where patient care has priority over learning. To understand how students' learning supported by residents' guidance unfolds during everyday clinical work, we conducted a video-reflexive ethnography (VRE) study among medical students and pediatric residents at a Dutch teaching hospital. Using Billett's interdependent learning theory, we examined how workplace affordances and learner engagement shaped students' participation and learning during daily clinical activities. More specifically, we aimed to explore 1) how medical students participate during daily clinical activities; 2) how medical students and residents explain students' engagement and its facilitation by residents; and 3) how medical students and residents can improve this engagement. Six students and their nine supervising residents were observed and filmed across multiple clinical settings, followed by nine reflexive sessions in which participants and researchers jointly discussed selected video fragments. Subsequently, the researchers performed reflexive thematic analysis of field notes, reflexive notes when selecting video fragments, and transcripts of reflexive sessions. Given the richness of our data, this poster focuses on the first two research questions. As a first result, a table was constructed categorizing everyday clinical activities and students' observed participation. Next, the process on how students and residents explained students' engagement and residents' facilitation that led to this participation is described. This table and the processes are illustrated through the example of *the phone call*. To conclude, VRE proved a valuable methodology to research workplace learning and guidance during everyday clinical work.

Intentionally Developing Team Learning Cultures: A Longitudinal Multiple-Case Study

Keywords: Attitudes and beliefs, Informal learning, Longitudinal studies, Social interaction

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Informal learning plays a crucial role in professional development. Yet, empirical insight into how informal learning processes develop over time remains limited. This gap is partly due to insufficient attention to the organizational context in which informal learning is embedded. Organizational culture is a key contextual factor shaping informal learning. Characteristics of the organizational culture that relates to learning behaviors and practices form the learning culture. This study examines how learning cultures change over time when teams actively work on improving their learning culture in a context-sensitive manner. We employed a longitudinal mixed-methods multiple-case study that investigates how learning cultures within teams develop over time when supported through a customized learning culture program. Seven teams within the Dutch judiciary participated, comprising 344 members in total, in a one-and-a-half-year program aimed at strengthening their learning culture. We collected data at multiple time points through questionnaires and focus groups. Quantitative measures include amongst others learning culture dimensions and social network data. Qualitative data provide in-depth insight into team learning experiences and perceived changes over time. Early results indicate that teams differ in current learning cultures, improvement priorities, and preferred improvement approaches. The second measurement will reveal early changes in learning culture and enable a comparison between teams that have actively engaged in the learning culture program and teams that have not yet done so. These results will contribute to a deeper understanding of learning cultures and provide practical guidance for fostering informal learning in a context-sensitive manner.

Towards Sustainability of Multi-generational Learning at Work (GENTRY)

Keywords: Ethnographic methods, Mixed-method research, Social aspects of learning and work, Workplace learning

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The poster presents an ongoing research project (GENTRY; 2025–2029) that aims to explore learning generations at work. The project focuses on multi-generational learning referring to the generational diversity of competencies, expertise, values, and key experiences, and how these manifest in employees' work. Applying the social-ecological theory of generations as a frame of reference and being informed by Mannheim's social generation theory and practice-based learning theory, the GENTRY studies learning generations and multi-generational learning practices at work. The project aims to frame how learning in and across generations can strengthen employees' and organizations' well-being constituting the humane sustainability of generational learning. An ethnographic design is used in the domains of health care and ICT in Finland, Denmark, and Sweden. Various qualitative (observations and interviews) and quantitative (survey) data collection and analytical tools (narrative, thematic analysis; statistical modeling) are utilized. A novel theoretical understanding of multi-generational learning at work will be produced to promote humane sustainability in working life.

What about Metawork?

Keywords: Competencies, Leadership, Leadership development, Qualitative methods

Presenting Author:Eva Friese, TU Dresden, Germany

The concept of metawork describes the work behind the work-those often invisible but essential activities that make the actual performance of work possible in the first place. Although metawork is crucial to the effectiveness of the main activity, these complex coordination and organizational steps tie up considerable time resources and are increasingly perceived as a burden. This research examines managers as key designers of work processes who must both manage metawork individually and structure it for their teams. The aim of the study is to identify the specific forms of metawork in everyday management and to record their subjective perception in the conflict between effectiveness and workload. Methodologically, the study follows a two-stage, qualitative research design. In a preliminary study, inductive categories are formed using daily reconstructions and notes. These serve as the basis for the main study, in which guided interviews provide deeper insights into subjective patterns of interpretation. A particular focus is placed on the importance of transversal competencies for coping with complex situational demands. The evaluation is carried out using qualitative content analysis in an iterative process that links deductive theoretical references (to metawork and transversal competencies) with inductive findings. Feedback loops, pre-tests, and intercoder checks ensure a high level of methodological quality. The study provides well-founded starting points for reassessing the relevance of metawork in a leadership context and developing strategies for coping with the associated workload.

Investigating learning processes in vocational education: Method and pilot findings

Keywords: Development, Learning approaches, Qualitative methods, Vocational education and apprenticeship training

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Vocational education helps students to enter a vocational practice. This learning for a vocation requires the development of vocational knowledge, a repertoire of actions, and a vocational identity (Koopman et al., 2025), and is supported across various learning contexts, including theory classes, projects, and internships (Bouw et al., 2021). Educators have pressing questions about how to strengthen students' learning in an integrated manner, highlighting the need for understanding vocational learning processes (De Bruijn, 2019). This PhD-project on learning for a vocation starts with a methodological study to explore and refine instruments to capture vocational learning processes. Previous research has identified four suitable concepts for investigating learning processes, namely: continuous progressive recontextualisation (Heusdens et al., 2018), meaning-making, sense-making (Bijlsma et al., 2016), and the process of belonging, becoming, and being (Chan, 2013). This pilot study examines how vocational students' learning processes can be investigated using the four central concepts. Based on a literature review of empirical research on vocational learning (Koopman et al., 2025), instruments were selected and piloted. A combination of observations including reflection-*in*-action interviews, reflection-*on*-action interviews, and storyline interviews was piloted with six students, to explore the suitability of these instruments for investigating the four concepts in vocational education. The analysis of the pilot data is ongoing. Findings will be available during the conference. This poster presents methodological insights following from this pilot, inviting reflection and dialogue on methodological challenges when investigating learning processes in vocational education.

Guided reflection as a tool for supervisory development and findings from a pilot study

Keywords: Development, Qualitative methods, Reflection, Simulation-based learning

Presenting Author:Henrika Anttila, University of Helsinki, Finland; **Co-Author:**Lotta Tikkanen, University of Helsinki, Finland

Academic supervision is a central function of universities and peer supervisors play a significant role in supervisory development. Still, systematic observation and shared reflection on supervisory practices remain underused. This study introduces a research-based tool that integrated self-reflection, observation, and collegial reflection to support supervisory development and examines how it enhances supervisors' learning. Pilot data were collected from five supervisors during a university pedagogy course at a Finnish university. Qualitative content analysis revealed a range of learning objectives focused on enhancing listening skills, guiding discussions, and providing support to supervisees. Preliminary findings indicate that supervisors found the guided reflection process to be an effective tool for professional development, increasing their awareness of their own supervisory practice. The study highlights the significance of guided reflection to intentionally develop supervisory skills.

Nursing students' career choice motivation: Explaining training satisfaction and dropout using Q

Keywords: Career development, Motivation, Vocational education and apprenticeship training, Workplace learning

Presenting Author:Laura Herget, Universität Kassel, Institute of Vocational Education, Germany; **Presenting Author:**Michael Goller, University of Kassel, Germany; **Co-Author:**Jonas Wagemann, Universität Kassel, Germany

Relatively little is known about why young people choose to pursue a career in nursing in Germany. Although a few studies have examined nurses' motivations for choosing their career, these studies mostly aim to provide an overview of the relative importance of different motivational factors. They do not offer deeper insights into the diversity of motivations for choosing a career in nursing. Nor do they explain how motivational differences lead to relevant outcomes, such as satisfaction with training or intentions to drop out. To address this research gap, a two-stage research design was implemented. The first stage involved conducting in-depth interviews with 34 students to gain insights into career choice motivations and related concepts. Based on these insights, a Q study is currently being developed and conducted. This method enables clusters of career-choice motivation patterns to be identified based on a relatively small sample size. To this end, two separate samples of first-year student nurses are being used: The first group acts as a validation sample and the second as a calibration sample. The patterns extracted from this analysis will provide insight into the diversity of career choice motivations among nurses. Furthermore, these patterns will be used to analyse differences in students' satisfaction with their training and their intentions to drop out, as these are considered important aspects of professional learning and development. This ongoing project is presented with a focus on the Q study. The findings are critically discussed and the implications for practice and further research are explored.

Building classroom management skills at a distance: The efficacy of Real-Time Remote Coaching

Keywords: Feedback, Teacher/trainer professional development, Technology-enhanced learning, Workplace learning

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Netherlands; **Co-Author:**Emmy Vrieling-Teunter, Open University of the Netherlands, Netherlands; **Co-Author:**Jorrick Beckers, Open University of the Netherlands, Netherlands; **Co-Author:**Kamakshi Rajagopal, Stories That Make Us, Belgium; **Co-Author:**Karel Krijns, Open University of the Netherlands, Netherlands

Classroom management requires the perception, comprehension [CKR1] [EB2] and prediction of events in the classroom that may hinder pupils' learning. It is part of a teacher's teaching skills, yet many student teachers find it hard to integrate classroom management with their instructional tasks. Wireless bug-in-ear (BIE) technology allows the direct, in-situ support during task performance by allowing an observing coach to provide performance feedback from the back of the classroom. Prior studies demonstrated that bug-in-ear (BIE) technology is a helpful tool to improve the student teachers' classroom management. Distance universities face the challenge to coach their teacher students at a distance. This requires a redesign of the BIE technology from an on-site support system involving an in-person coach to a system that enables the same support with the coach operating at a remote location. The poster outlines the technical requirements of such a redesign with particular attention to the implications for task fulfillment by the coach and its effects on distance student teachers such as their feelings of safety in the classroom and the ease with which they follow the coach's suggestions. A series of design studies will be conducted in which we explore the implications of the technical upgrades along the dimensions of the coach being in-person-vs-remote, the placement of the cameras, and of the audio equipment to optimize the coach's visual and auditory access to the classroom.

Once upon a time in academia: PhD candidates' reflections on work and wellbeing through reading

Keywords: Career development, Mixed-method research, Reflection, Workplace learning

Presenting Author:Merel van Goch, Radboud University, Netherlands

The well-being of PhD candidates is under pressure; many of them experience imposter feelings. Reading for pleasure increases people's well-being: Stories, and especially humor in stories, can help people by creating reflective distance from reality. We hypothesized that campus novels – novels set on college campuses, told from the perspectives of faculty or students – are particularly effective, because they are characterized by dark humor and satire. In this project, PhD candidates reflected individually and in groups on campus novel texts, and we studied the interaction between texts, readers and well-being at work. We found that reading literary works that relate to their experiences at work seems to help PhD candidates to cope with their work stress and compromised well-being.

Teacher professional development in financial literacy education – what content to cover?

Keywords: Curriculum development, Qualitative methods, Teacher/trainer professional development, Vocational education and apprenticeship training

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Since the early 2000s and particularly since the financial crises of 2007/2008, financial literacy has become an internationally recognized topic. Financial literacy is assumed to secure individual as well as societal financial well-being. However, financial illiteracy is widespread, so that financial education initiatives in schools and non-school contexts have been launched in many countries around the globe, and recently also in Germany. Those initiatives mainly focus on student learning whereas teacher professional development (TPD) has not been of primary interest, so far, even though well-trained teachers are important for developing students' skills. Crucial for successful TPD is—among others—content knowledge. However, the content area of financial literacy education is anything else but clearly specified. To clarify the content area, specifically for teachers in vocational education and training (VET) as target group, we conducted interviews with 46 experts from the finance and education sectors applying a Critical Incident Technique. The interviews were transcribed and analyzed using content analysis with inductive category formation. As a result, eight key content areas (e.g. investing and saving, budgeting), eleven relevant decision-making situations (e.g. opening a savings account) as well as success-critical considerations and behaviors related to these situations (considering costs of a savings account) could be specified. The results help to design VET teachers' TPD courses and thus enable them to support VET students in developing financial literacy.

L&D consultants' Professional Identity amid Shifting Professional Logics within the Organisation

Keywords: Life-long learning, Professional identity, Self-concept, Workplace innovation

Presenting Author:Anna Post, University of Twente, Netherlands; **Co-Author:**Frank Léoné, University of Twente, Netherlands

Learning and Development (L&D) consultants support organisations in designing and delivering learning interventions. In recent years, new instructional design models, such as the 70:20:10 framework and the 5 Moments of Need model, have gained increasing attention in the workplace. Implementing these models can shift the professional logics underpinning consultants' legitimacy, frequently leading to perceived threats to their professional identity. Therefore, this study investigated how L&D consultants engage in identity work to manage these threats during organisational change. Semi-structured interviews with ten L&D consultants explored the identity challenges they faced and the strategies they used in response. Findings show that L&D consultants experienced multiple threats to the value, enactment, and meaning of their professional identity. They responded with diverse coping strategies, including protective identity work such as derogation and positive-distinctiveness, as well as the restructuring strategy of meaning change, showing how they actively incorporated emergent frameworks into their professional identity. We also identified sub-strategies within these broader categories of derogation, positive-distinctiveness, and meaning change; highlighting the nuanced ways the professional navigate change. Importantly, professionals drew on fundamentally different sources of legitimacy when reshaping identity meanings: some relied on intrapersonal sensemaking while others depended on interpersonal validation. By showing how professionals employ identity work strategies differently and linking these strategies to sources of legitimacy, this study deepens understanding of how professionals respond to organisational change and maintain their professional standing.

Bridge the Gap: helping autistic students transition to the workplace using transition planning

Keywords: Career development, Design-based research, Inclusion, Mentoring and coaching

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Autistic graduates often encounter substantial challenges when transitioning from higher education to the labor market, including difficulties securing employment that matches their skills, interests and qualifications. These challenges are partially linked to barriers in developing self-determination skills, which are essential for constructing a sustainable career pathway. Providing structured support to these students by jointly creating and monitoring transition planning has the potential to reduce anxiety and tackle the described challenges. *Bridge the gAP* is a two-year, practice-oriented research project conducted at AP University of Applied Sciences and Arts aiming to develop evidence informed methodology on constructing transition plans with (self-)diagnosed autistic students. Guided by Universal Design for Transition (UDT), the project consists of four phases: (1) a needs analysis via a large-scale digital survey (N>100) and follow-up interviews; (2) co-creation of a transitionplanning methodology with stakeholders; (3) piloting of the methodology with autistic students and jobseekers; and (4) user research through focus groups. -year, practice-oriented research project conducted at AP University of Applied Sciences and Arts aiming to develop an evidence-informed methodology -up interviews; (2) co-creation of a transition-planning methodology The project will raise awareness on the challenges autistic students face when transitioning to the labor market, provide new research insights and result into specific tools and guidelines as well as policy advice to both higher education institutions as the labor market. Our poster presentation will present the general outline of the project as well as initial empirical results on the needs analysis.

Media pedagogical and AI-related professionalization needs in adult education

Keywords: Adult education, Artificial Intelligence, Digital literacy, Teacher/trainer professional development

Presenting Author:Kim-Maureen Martin, German Institute for Adult Education – Leibniz Centre for Lifelong Learning, Germany; **Presenting Author:**Esma Eskin, Ludwig-Maximilians-Universität (LMU), Germany; **Co-Author:**Caroline Bonnes, German Institute for Adult Education – Leibniz Centre for Lifelong Learning, Germany; **Co-Author:**Bernhard Schmidt-Hertha, Ludwig-Maximilians-Universität (LMU), Germany

The digital transformation, particularly driven by developments in artificial intelligence (AI), poses new challenges for the media pedagogical competence of trainers in adult education. This study aims to systematically identify the needs of adult education organizations and trainers regarding professionalization in the use of digital media and AI. Using a mixed-methods design, it combines expert interviews and an online survey with adult education trainers in Germany. Preliminary analyses indicate substantial heterogeneity in trainers' media use and self-assessed competencies. Media pedagogical skills are rated low to moderate, while AI competencies are mainly assessed as basic to advanced. Despite this, AI is rarely used in educational practice. Interest in professional development is high, but lack of time and perceived relevance limit participation. Respondents favor short, modular, practice-oriented training and emphasize the need for methods, tools, and reflective AI use, as well as strategies to foster openness toward new technologies. Based on these findings, a training concept will be developed to foster reflective and effective use of digital media and AI in teaching. The study thereby contributes to the professionalization of adult education

staff and supports the development of targeted training programs aligned with actual needs.

Engagement in team learning behaviours at individual versus team level leading to team performance

Keywords: Informal learning, Quantitative methods, Social interaction, Teamwork

Presenting Author:Verena Watzek, University of Regensburg, Germany; **Co-Author:**Andreas Widmann, University of Regensburg, Germany; **Co-Author:**Regina Mulder, University of Regensburg, Germany

To understand if for team performance all members need to engage in team learning behaviours, or if it a few members need to engage, this study aims to find out differences in the relationships between team learning conditions, engagement in team learning behaviours (TLBs) at individual versus team level and team performance. TLBs occur within the team and refer to activities carried out in interaction between the team members. A cross-sectional survey was conducted with 309 team members from 87 virtual teams in courses. Correlation analyses, correlation difference tests and structural equation modelling was carried out. Results showed that social cohesion and task interdependence are positively related to engagement in TLBs at both levels, whereby social cohesion seems to be more important for engagement in TLBs at team level. Results suggest that engagement in TLBs at team level is more important for achieving team performance than engagement in TLBs at individual level. The identified differences in relation to team performance emphasise the importance of team learning as a multilevel phenomenon that should be investigated at team level to reach higher team performance. The results indicate that work tasks should be divided among team members, especially to those who are experts that can valuably contribute to solving a task. Such team members should actively be encouraged by team leaders to engage in TLBs such as sharing their knowledge and reflecting on the tasks or strategies in order to reach higher team performance in their teamwork.

Post-secondary career decision-making tasks: development and validation of an expanded SSCTI

Keywords: Assessment methods, Career development, Mixed-method research, Secondary education

Presenting Author:Casper Van Roey, Antwerp University, Belgium; **Co-Author:**Karine Verschuere, KU Leuven, Belgium; **Co-Author:**Vincent Donche, University of Antwerp, Belgium

Adolescence is a pivotal period in which young people make their first major career-related decisions, such as opting for further education or entering the labour market. Difficulties in this decision-making process have been associated with adverse educational and vocational outcomes, highlighting the need for instruments that assess how adolescents make career decisions rather than focusing solely on decision outcomes. The Study Choice Task Inventory (SCTI) was developed as a theory-driven, process-oriented instrument to assess key decisional tasks in adolescents' study choice processes. Its shortened version (SSCTI) improved psychometric robustness and was implemented within Columbus, a large-scale online exploration and feedback instrument supporting career decision-making in Flemish secondary education. However, the current implementation of the SSCTI remains primarily oriented towards study-related pathways, leaving labour market entry and indecision insufficiently captured. The present study aims to develop and validate an expanded version of the SSCTI that assesses career decision-making tasks across three post-secondary pathways: opting to study, opting to enter the labour market, and indecision between both pathways. Items were developed through adaption and extension of existing SCTI/SSCTI items, reviewed by academic experts and practitioners, and refined through cognitive interviews with students from different educational tracks. Psychometric analyses, including confirmatory factor analysis and measurement invariance testing, are currently ongoing in a pilot sample. The final instrument is intended for large-scale implementation within Columbus to support career decision-making processes for different post-secondary pathways.

Video-based social and epistemic network analysis of team interactions on data literacy

Keywords: Collective learning, Design-based research, Social interaction, Teacher/trainer professional development

Presenting Author:Justine Baert, Ghent University, Belgium; **Co-Author:**Dries De Weerd, University of Antwerp / Ghent University, Belgium; **Co-Author:**Ruben Vanderlinde, Ghent University, Belgium; **Co-Author:**Roos Van Gasse, KU LEUVEN, Belgium; **Co-Author:**Sven De Maeyer, Antwerp University, Belgium

The increasing availability of data in schools has positioned data literacy as a central theme in educational research. Teachers are expected to act as data-literate professionals who are able to collect, interpret, and analyse data to inform instructional decision-making. However, previous research indicates that teachers' data literacy remains limited. Data literacy is conceptualised as a complex and multidimensional construct that combines skills for transforming data into information and knowledge with context-specific expertise to interpret data and translate it into pedagogical decisions. Social interactions among teachers are assumed to play an important role in this process through shared sensemaking, knowledge sharing, and collaborative decision-making. Despite these assumptions, empirical research on the added value of social interactions for data literacy learning remains methodologically challenging. Existing social network analysis (SNA) studies often rely on self-reported data, providing limited insight into actual and dynamic interaction processes. To address these limitations, this exploratory study employs video observations to construct social network data. Ten teams of six in-service teachers ($n = 60$) engage in vignette-based discussions supported by quantitative and qualitative data sources. Video data are analysed to examine both the structural characteristics of social interactions (e.g., density, centrality) through social network analysis and the content of interactions through epistemic network analysis. The study aims to provide insight into structural and epistemic similarities and differences in team discussions within the data literacy process and to contribute methodologically to research on collaborative data use in educational contexts.

In Sync or out of Sync? Team Reflexivity and Group Affect in Project Teams over Time

Keywords: Emotion and affect, Longitudinal studies, Reflection, Teamwork

Presenting Author:Lieke Lichten, University of Antwerp, Belgium; **Co-Author:**Piet Van den Bossche, University of Antwerp, Belgium; **Co-Author:**Sven De Maeyer, Antwerp University, Belgium

Team reflexivity, or the collective process through which teams reflect on and adapt their goals, strategies, and ways of working, is widely recognized as beneficial for team functioning. However, little is known about how team reflexivity is connected to group affect. This longitudinal study examines the dynamic interplay between team reflexivity and group affect over time. Participants were master students working in self-directed project teams over an eight-month period. Team reflexivity and positive and negative group affective tone were assessed bi-weekly via an online questionnaire. Bayesian multilevel analysis was used to capture temporal change and between-team differences. Results showed that team reflexivity, positive group affect, and negative group affect followed distinct, non-synchronous trajectories. Team reflexivity displayed a parabolic pattern, whereas positive group affect showed an opposing trajectory, with its lowest point preceding the peak in team reflexivity. Negative group affect decreased linearly over time. Results also indicate between-team variability. The findings highlight the dynamic and emergent nature of affect in team reflexivity and offer implications for understanding and supporting reflexive teamwork.

Challenges of sustainable workplace learning in digitalized work

Keywords: Learning technologies, Sustainable development, Technology-enhanced learning, Workplace learning

Presenting Author:Anne Karhapää, University of Eastern Finland, Finland; **Co-Author:**Soila Lemmetty, University of Eastern Finland, Finland

Learning is often seen as a means to advance sustainability across its environmental, social, and economic dimensions, however, it is equally important to consider the sustainability of learning itself. In this study we further develop the concept of sustainability of learning in digitalized work. Especially now, as digitalisation is transforming workplaces as learning environments, it is essential to consider how the continuity of learning and its long-term impacts are realised in ways that support employees' well-being. In this study, we identify key challenges that digitalisation poses to the sustainability of workplace learning, as well as ways to address these challenges.

Becoming a professional: Reflection prompts to foster psychotherapeutic competence

Keywords: Competencies, Development, Quantitative methods, Reflection

Presenting Author:Verena Watzek, University of Regensburg, Germany; **Co-Author:**Gerhard Messmann, University of Regensburg, Germany; **Co-Author:**Sebastian Ertl, Universität Regensburg, Germany; **Co-Author:**David Kolar, University of Regensburg, Germany; **Co-Author:**Regina Mulder, University of Regensburg, Germany

This study investigates how different reflection prompts affect the development of psychotherapeutic competence among prospective therapists in a German master's training program. Reflective activities are meaningful to enable prospective psychotherapists to effectively use cognitive, motivational, and emotional experiences in their training context. The study utilized reflection prompts with various levels of specificity and different aspects of the learning process – (meta)cognitive, emotional-motivational aspects of the learning process. The following research question will be answered: What characteristics of prompts foster the development of psychotherapeutic competence? The study with 72 master students was conducted over six months, using a quasi-experimental design with cluster randomization. The prospective psychotherapists took part in one of three parallel courses, each of which was assigned a different set of reflection prompts – basic, (meta)cognitive, and emotional-motivational. Psychotherapeutic competence was measured at six points using validated scales for therapeutic skills, self-reflection, professional self-efficacy, professional identity, and professional development. Results of ANOVAs showed significant increases over time in *therapeutic skills*, *professional development* and *professional identity* and *professional self-efficacy*, though no effect was observed in *self-reflection*. Contrary to expectations, results of ANCOVAs showed no significant differences between groups based on prompt specificity or different aspects of the learning process, indicating that *basic* prompts appear to be sufficient under certain conditions to stimulate meaningful reflection. Findings underscore the

need for further research on optimizing reflective interventions in therapist training.

The Hidden Layer of Modern Work: Metawork and Transversal Competence Development

Keywords: Competencies, Leadership development, Work-based learning, Workplace learning

Presenting Author:Eva Friese, TU Dresden, Germany; **Co-Author:**Ianina Scheuch, TU Dresden, Germany; **Co-Author:**Baerbel Fuerstenau, TU Dresden, Germany

Modern professional work is increasingly complex, digitally mediated, and characterized by constant coordination and adaptation. Beyond domain-specific tasks, professionals spend substantial time to a hidden layer of *Metawork*—the often invisible “work behind the work” that makes task execution possible. Metawork includes organizing workflows, managing information flows, coordinating across stakeholders, navigating digital tools, and structuring one’s own work. Although essential, these activities are frequently perceived as inefficient and burdensome, contributing to the growing gap between effort and visible outcomes in contemporary work environments. This poster conceptualizes Metawork not only as a challenge to productivity but also as a critical context for learning. We argue that Metawork is inherently linked to the development of transversal competences such as critical thinking, adaptability, collaboration, communication, and self-regulation. These competences are required to manage the complexity, fragmentation, and unpredictability characteristic of Metawork. At the same time, engaging in Metawork provides continuous opportunities to develop and refine these competences through everyday professional practice. Drawing on a narrative review of current literature, the poster synthesizes definitions, drivers, and key activities of MetaWork and explicitly links them to transversal competence development. In addition, it outlines a future empirical research design, presented as part of a larger research project, aimed at examining MetaWork practices and competence development in real-world professional contexts.

The effects of meta-work on professional and organizational development: a systematic review

Keywords: Adult education, Informal learning, Life-long learning, Workplace learning

Presenting Author:Alexander Schmid, University of Regensburg, Germany; **Co-Author:**Vanessa Hämmerl, University of Regensburg, Germany; **Co-Author:**Regina Mulder, University of Regensburg, Germany

Rapid technological change reshapes work and increases demands for professional and organizational development. Yet “meta-work”, the work that enables work, often remains unseen in formal accounts, limiting how learning organizations can support development. Meta-work is treated as an umbrella term spanning adjacent labels (e.g., hidden/invisible/backstage work) and various dimensions are found in literature, such as mobilization, configuration, articulation, organizing. These are examined across individual, team, and organizational levels. The questions of this contribution are: (1) What is the empirical evidence on meta-work? and (2) What are the effects of meta-work on professional and organizational development? A systematic literature review was conducted in Web of Science, ProQuest, and Business Source Premier using combined term- and dimension-based search strings. The search yielded 191 records; 85 studies currently meet inclusion criteria. The publications span 2005–2026 and cluster after 2018. The terminology is inconsistent: “invisible work” dominates, while explicit “meta-work” appears less often. Evidence is strongest in healthcare and emphasizes articulation/coordination work, typically in complex settings and around newly implemented technologies. The effects of components of meta-work are predominantly reported descriptively, with limited empirical testing. Reported effects concentrate on individual and team learning, with limited evidence for organizational development. Overall, technology-driven change often adds meta-work and learning demands that should be recognized and supported.

Situational Judgment Tests in financial education. Test or learning opportunity?

Keywords: Assessment methods, Citizenship education, Instructional design, Learning approaches

Presenting Author:Vincent Weber, Goethe-University Frankfurt, Germany; **Co-Author:**Sebastian Heidele, Leipzig University, Germany; **Co-Author:**Eveline Wuttke, Goethe-Universität Frankfurt, Germany; **Co-Author:**Roland Happ, Leipzig University, Germany; **Co-Author:**Josseline Stock, Leipzig University, Germany

Financial literacy is particularly important for young people. When they start vocational education and training, they face their first important financial decisions. These may concern moving out of their parents' home, for example, but also decisions about various types of insurance. It has been shown that early decisions made without sufficient financial literacy can have long-term consequences (Fürstenau et al., 2020). Standardized testing procedures (e.g., “Big Three,” Lusardi & Mitchell, 2011) are often used to measure financial literacy, and the focus tends to be on isolated content areas (Welsandt & Abs, 2023). Furthermore, most tests just measure knowledge, which might or might not lead to respective action. By contrast, situational judgment tests (SJTs) simulate situations in which decisions must be made. It is assumed that these decisions serve as an indicator for future actions (Wuttke & Aprea, 2018). Moreover, SJTs can be used as learning opportunities by having students complete the tasks and then reflect on their decisions and their consequences. In our contribution we report results on the use of SJTs as a learning tool. For this purpose, a multimedia-based test was supplemented with questions for the participants, designed to assess the extent to which the learning potential could be realized. The results of these questions are first used to examine what information was extracted from the task. Subsequently, the use of additional information in decision-making situations is tested. The poster discusses various forms of presenting the information in SJT.

Situation awareness of teachers: A scoping review

Keywords: Cognitive skills, Development, Review study, Teacher/trainer professional development

Presenting Author:Maikki Pouta, University of Turku, Finland; **Co-Author:**Kateryna Horlenko, Vytautas Magnus University, Lithuania; **Co-Author:**Vaida Jurgilė, Vytautas Magnus University, Lithuania; **Co-Author:**Ilona Tandzegolskienė-Bielaglovė, Vytautas Magnus University, Lithuania

This scoping review systematically mapped the theoretical and empirical literature on teacher situation awareness. Situation awareness refers to a professional’s ability to perceive and interpret meaningful cues in the environment and anticipate their future implications. Twelve publications examining teacher situation awareness across diverse educational contexts were identified. Theoretically, these studies addressed teacher situation awareness in relation to teacher noticing, either applying human factors definitions alongside psychological or educational frameworks or proposing new conceptual models. Empirical studies were predominantly qualitative and relied mainly on teachers’ self-reports. Findings highlighted the types of classroom stimuli recognized by teachers, teachers’ visual attention, cognitive processes, and actions, as well as strategies for enhancing situation awareness. Overall, the review emphasizes the need for further investigation into the factors and outcomes associated with teacher situation awareness and for the development of measures.

The path to professionalisation: the impact of pracademics on criminal justice professional learning

Keywords: Communities of learners and/or practice, Professional identity, Social aspects of learning and work, Vocational education and apprenticeship training

Presenting Author:Teri-Lisa Griffiths, Sheffield Hallam University, United Kingdom

This research explores the topic of pracademics—academics with practitioner experience—within higher education criminal justice professional programmes in England. Previous research demonstrates how pracademics can enhance university teaching by linking academia to industry and creating applied teaching programmes. The increased recruitment of pracademics more broadly is driven by a political focus on graduate outcomes and the rise of degree apprenticeships. Focussing on the Policing degree/degree apprenticeship and the Professional Qualification in Probation (PQIP), where students are also employed as trainee practitioners, these courses offer legitimacy to these highly scrutinised professions. Subsequently, this study aims to advance understanding of how pracademics contribute to the ‘professionalisation’ of criminal justice occupations. Objectives for this project include examining pracademics’ perspectives on professional practice, their engagement with academic networks, the creation of communities of practice, and their role in transforming practice through promoting evidenced-based practice and professional values within the specified courses.

Avoid, Neutralize, or Engage? How Teachers Respond to Controversial and Sensitive Issues

Keywords: Citizenship education, Emotion and affect, Instructional design, Teacher/trainer professional development

Presenting Author:Esra Nur Bellikli-Özcam, Humboldt University Berlin, Germany; **Co-Author:**Elisabeth Mayweg, Humboldt University of Berlin, Germany

Controversial and socially sensitive issues that can emerge in classroom discussions increasingly confront teachers with complex professional challenges. In times of socio-political polarisation, growing scepticism towards democratic institutions, and an increase in hate speech, disinformation, and science denial, the constructive handling of controversy has gained importance as a core dimension of democratic education. At the same time, it needs additional evidence on how teachers respond to controversy and how ready they feel to navigate controversial topics inside the classroom. This contribution presents an experimentally designed study that will be conducted in Summer 2026 and will use a vignette approach to examine how pre-service teachers, including student teachers and teacher trainees in Germany respond to sensitive and controversial classroom situations. In a 2x2 between-subjects design, the study varies both the **level of topic controversy** (low vs. high; determined via a pilot testing) and the **instructional context** (teacher-initiated vs. spontaneously emerging controversy). Thematic vignettes address an everyday topic (family concepts) and a highly controversial, current socio-political issue (Israel–Palestine). Participants’ **anticipated instructional decisions** are assessed as the primary outcome. The study focuses on relationships between perceived controversy, professional dispositions, affective responses, and instructional intentions. Initial findings are expected to help identify factors that foster reflective and deliberative approaches to addressing controversy inside the classroom and to identify key areas of professional learning and development. Overall, the contribution provides an empirical perspective on teachers’ professional development at the intersection of learning, work, and democratic education.

Clinical performance feedback in Dutch youth care: current use, facilitators and barriers

Keywords: Feedback, Life-long learning, Qualitative methods, Workplace learning

Presenting Author:Annette Tijmann, University of Amsterdam, Netherlands; **Co-Author:**Anouk van Dijk, University of Amsterdam, Netherlands; **Co-Author:**Eva Mulder, University of Amsterdam, Netherlands; **Co-Author:**Leonieke Boendermaker, University of Amsterdam, Netherlands

In order to develop their skills and continue to improve the quality of care in a changing environment, youth care professionals require feedback on their performance. The utilisation of Clinical Performance Feedback (CPF) – defined as the systematic provision of feedback on professionals' clinical practice approaches, i.e. basic approaches and evidence-based methods – has been identified as a promising strategy. However, its implementation in the domain of Dutch youth care remains limited. The poster details the findings of the pre-registered (<https://osf.io/v79p6>) exploratory qualitative study of a PhD project of the NWA-ORC-funded *Doing What Works for Children* (DWW) programme. The exploratory qualitative study is grounded in Clinical Performance Feedback Intervention Theory and examines 1) current practice approaches in youth care and examines feedback professionals receive on their performance, 2) perceived facilitators and barriers for using feedback in workplace learning, and 3) possible similarities and discrepancies between the perspectives of policy officers, professionals and managers. Semi-structured interviews were conducted with 29 participants from three specialist youth care organisations (12 policy officers, 12 youth care professionals, 5 managers), recruited through convenience and purposive sampling to maximise relevant expertise. A codebook thematic analysis, guided by CP-FIT and supplemented with inductive coding, was used to obtain the results. Findings will be validated through member checks with participating organisations. The results will inform the co-design of a CPF intervention and implementation plan (Study 2), and the subsequent evaluation of its effectiveness and implementation (Study 3) within the broader PhD project.

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M102

Roundtable

Learning and Instructional Technology, Lifelong Learning, Teaching and Teacher Education

Designing Learning for Professional and Workplace Contexts

Keywords: Adult education, Ethnographic methods, Instructional design, Life-long learning, Simulation-based learning, Teacher/trainer professional development, Technology-enhanced learning, Vocational education and apprenticeship training, Workplace learning

Interest group: SIG 14 - Learning and Professional Development

Chairperson: Soila Lemmetty, University of Eastern Finland, Finland

Redesigning induction programs: tailoring second career teachers' needs in vocational education

Keywords: Adult education, Life-long learning, Teacher/trainer professional development, Workplace learning

Presenting Author:Edy van Renselaar, Open University of the Netherlands, Netherlands; **Co-Author:**mieke koeslag-kreunen, Hogeschool Utrecht (University of Applied Sciences Utrecht), Netherlands; **Co-Author:**Patricia Brouwer, Hogeschool Utrecht Lectoraat Werken in Onderwijs, Netherlands; **Co-Author:**Elly de Bruijn, Open University of the Netherlands, Netherlands

Second career teachers (SCTs) are essential to vocational education (VE), as they bring current field expertise to educate their students. Simultaneously, these SCTs are developing as teachers. However, many SCTs leave the profession within five years, underscoring the need for induction programs that address their dual learning and working processes. Prior work in this PhD project identified five themes crucial for SCTs induction in VE: developing a second professional identity, adult learning processes, collaborative learning, tailor-made coaching, and co-creation of induction programs. This study investigates which interventions can contribute to a redesigned induction program tailored to SCTs in VE. Using a multiple-case study design, the researcher participated as participant observer in design teams from three vocational schools. CIMO-logic was used to develop design principles by linking context, interventions, mechanisms, and intended outcomes for their induction programs. Data from group discussions and generated materials were analyzed to identify proposed interventions and the reasoning behind them, followed by a cross-case analysis to identify transferable CIMO patterns. The study aims to generate knowledge on what interventions contribute to a redesigned induction program for SCTs in VE and to inspire schools seeking to improve their induction practices. During the Round Table, preliminary findings will be presented, including draft CIMO formulations from one case. Participants will be invited to critically review data and the researcher's contributions as participant observer, to provide feedback on the clarity, coherence, and refinement of the CIMO chains. This interactive dialogue will support further refining and validation of the study's outcomes.

Understanding Workplace Learning in Modern Industry: An Ethnographic Approach

Keywords: Ethnographic methods, Life-long learning, Vocational education and apprenticeship training, Workplace learning

Presenting Author:Maaïke Endedijk, University of Twente, Netherlands; **Co-Author:**Lisa Winkelman, University of Twente, Netherlands; **Co-Author:**Jessie Koen, Netherlands Organisation for Applied Scientific Research (TNO), Netherlands

Modern industry experiences challenges that require continuous workplace learning, the shifting consumer demand necessitates adaptable production processes, while an aging workforce threatens critical knowledge loss through retirement. This ethnographic, multiple-case study examines how workplace learning unfolds in Dutch small and medium-sized manufacturing enterprises (SMEs) by following four vocational education and training (VET) students over the course of three months. Using ethnographic methods including observation, interviews, fieldnotes, and photographs, we explore the interactions, actions, and contexts that shape learning processes in SMEs. Preliminary findings reveal that the influence of VET students goes beyond their own development. The presence of VET students can initiate or accelerate learning processes among supervisors and colleagues. This research addresses the urgent need for understanding how learning processes in modern industry take shape. By gaining these insights we create the possibility to develop robust, contextually appropriate recommendations for workplace learning that align with the natural dynamics of modern industrial SMEs.

Co-designing Simulation-Based Learning for Complex Professional Skills: A 4C/ID-Guided Approach

Keywords: Instructional design, Simulation-based learning, Technology-enhanced learning, Workplace learning

Presenting Author:Mert Tutenkan, University of Twente, Netherlands; **Co-Author:**Sebastian Dennerlein, IT:U Interdisciplinary Transformation University Austria, Austria; **Co-Author:**Mohammadreza Farrokhnia, University of Twente, Netherlands; **Co-Author:**Tingting Zhu, University of Twente, Netherlands; **Co-Author:**Maaïke Endedijk, University of Twente, Netherlands; **Co-Author:**Wilko Rohlf, RWTH Aachen University, Germany

Designing learning environments that support learners in developing complex professional skills is one of the key challenges in practice. Although simulation-based learning environments could support this process, they do not always adequately reflect the realities of complex professional skills, highlighting the need for more systematic design approaches. To address this, the present study examines how a simulation-based learning environment for complex professional skills in heat pump installation can be designed through co-design sessions guided by the Four-Component Instructional Design (4C/ID) model. The current study adopted a 4C/ID guided co-design approach and involved two complementary co-design sessions with multiple stakeholders, including educational researchers, technical experts from the heat pump domain, and representatives from industry and training organizations. The first co-design session served as a preparatory step to scope the instructional design process and resulted in selecting heat load calculation for a single room as the main task. The second one explicitly applied the 4C/ID model to elaborate on the core components of the model, identifying learning goals, learning tasks, recurrent and non-recurrent task aspects, and supportive and just-in-time information across three sublevels of task complexity. The co-design processes culminated in three instructional blueprints integrating off-site learning activities, on-site workplace learning activities, and instructional support. These blueprints are intermediate design outcomes that will be further refined through iterative co-design. Overall, the study highlights how such an instructional design model can provide a systematic structure for early-stage co-design when developing simulation-based learning environments for complex professional skills.

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M101

Workshop

Who influences the results? Reflecting on researcher positionality and bias across methods

Keywords: Inclusion, Qualitative methods, Quantitative methods, Reflection

Interest group: SIG 14 - Learning and Professional Development

Who influences the results? Reflecting on researcher positionality and bias across methods

Keywords: Inclusion, Qualitative methods, Quantitative methods, Reflection

Presenting Author:Bea Mertens, University of Antwerp, Belgium; **Presenting Author:**Marije Lesterhuis, UMC Utrecht, Netherlands

Social science researchers are often less diverse than the populations they study. However, researchers' backgrounds, identities, and lived experiences

inevitably influence research choices, interpretations, and outcomes, often in implicit ways. While reflexivity and positionality are well established in qualitative research, their relevance for quantitative research is less frequently acknowledged or explicitly addressed (Breznau et al., 2022). This workshop aims to raise awareness of how researcher positionality influences research across methodological traditions. Using a framework that conceptualizes positionality as a constellation of visible and less visible identities, participants are guided to reflect on how biases can emerge in both qualitative and quantitative research processes. The workshop is grounded in the six dimensions of positionality identified by Secules et al. (2021), which highlight how positionality may affect research topics, epistemological assumptions, ontological perspectives on what can be observed, methodological decisions, researcher–participant relationships, and the communication of results. The workshop combines short theoretical inputs with interactive reflection activities and two concrete research examples: one qualitative and one quantitative study in which positionality is explicitly reflected upon in relation to methodological choices and the interpretation of findings. Participants will apply the reflexivity framework to their own research and engage in collective discussion on how greater awareness of positionality can contribute to more transparent and inclusive research practices.

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M107

Workshop

Multimodal data in the Antwerp Social Lab

Keywords: Eye tracking, Learning analytics, Mixed-method research, Neuroscience

Interest group: SIG 14 - Learning and Professional Development

Multimodal data in the Antwerp Social Lab

Keywords: Eye tracking, Learning analytics, Mixed-method research, Neuroscience

Presenting Author: Glen Joris, University of Antwerp, Belgium; **Presenting Author:** Piet Van den Bossche, University of Antwerp, Belgium; **Presenting**

Author: David Gijbels, University of Antwerp, Belgium; **Co-Author:** Karolien Poels, University of Antwerp, Belgium

Learning and professional development are complex phenomena. To study them, researchers increasingly use multimodal data, combining behavioural observations, physiological signals, digital traces, and self-reports. However, collecting and analysing these data can be challenging. This workshop, hosted by the Antwerp Social Lab (tASL), a core research facility at the University of Antwerp, gives attendees hands-on experience with multimodal research methods and infrastructure. Participants will take part in interactive demonstrations and exercises, exploring what multimodal data are and how they can be used to study important concepts such as engagement, performance, and stress. By visiting the lab's facilities, they may also gain inspiration for their own research and potential collaborations.

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M103

Roundtable

Lifelong Learning

Learning Communities as Spaces for Professional Development

Keywords: Adaptive learning, Communities of learners and/or practice, Curriculum development, Interest, Learning approaches, Learning environments, Life-long learning, Work-based learning

Interest group: SIG 14 - Learning and Professional Development

Chairperson: Luwei Bai, United Kingdom

A Framework for Thriving Learning Communities in Safety and Security domain

Keywords: Adaptive learning, Learning approaches, Learning environments, Life-long learning

Presenting Author: Julia van, The Hague University of Applied Sciences, Netherlands

Learning Communities (LCs) are vital for professional development and innovation in addressing complex societal challenges through cross-organizational collaboration. While extensively studied elsewhere, the safety and security domain remains under presented in research despite its unique technical and cultural demands. Our research works on a Context-Mechanism-Outcome (CMO) framework to get insights into *why* and *how* and *under what circumstances* Learning Communities work for *who*. Our study follows six LCs within the safety and security domain using open observations and semi-structured interviews. By analyzing the domain-specific contexts and learning mechanisms, we extract design principles specifically for Learning Communities in the safety and security domain. Our round table session focuses on a iterative refinement of a framework developed to aim at strengthening Learning Communities (LCs) within the safety and security domain. Central to this development is the validation of a preliminary Context-Mechanism-Outcome (CMO) derived from open observations, semi-structured interviews. Our next step is testing these CMOs in co-design sessions with practitioners aimed at the development of a manual for these LCs. By actively involving practitioners in the co-design process, we aim to create an inspiring collaborative environment where real-world expertise directly fuels the innovation and optimization of our methodology. During the round table we first seek expert feedback on both the co-design methodology and the practical applicability of our approach in high-stakes professional environments.

Do Learning Communities enhance professional development?

Keywords: Communities of learners and/or practice, Learning environments, Life-long learning, Work-based learning

Presenting Author: Haske van Vlokhoven, HAN University of Applied Sciences, Netherlands; **Co-Author:** Sjoerd de Vries, Hanze University Groningen.

University of Applied Sciences, Netherlands; **Co-Author:** Derk-Jan Nijman, Saxion University of Applied Sciences, Netherlands; **Co-Author:** Ilse Ouwens, HAN University Nijmegen, Netherlands

The energy transition presents not only a technological challenge, but fundamentally a human capital challenge, requiring professionals who can deal with uncertainty and act effectively in complex and unpredictable situations. Learning Communities (LCs) are increasingly positioned as a promising response, as they aim to integrate working, innovation and learning, in hybrid, transdisciplinary learning environments (e.g. Tankink et al., 2024; Kerngroep Netwerk Learning Communities, 2023). However, empirical evidence on how and what participants actually learn in LCs, and under which conditions these learning outcomes are sustainable, remains limited. This roundtable critically examines whether and how LCs contribute to participants' - students, professionals, educators - professional development. Drawing on empirical insights (case study research) from multiple LCs embedded in three different Dutch regional energy transition innovation ecosystems, we explore tensions between open-ended learning tasks and curricular structures, shifting roles of professionals, students and educators, and the challenge of embedding ecosystem-generated knowledge in organizations and education. The roundtable invites participants to discuss outcomes of LCs in terms of professional development, and to reflect on a meaningful integration of working, innovation and learning.

Designing Learning Environments to Support Students' Cross Context Learning in Education and Work

Keywords: Curriculum development, Interest, Learning environments, Life-long learning

Presenting Author: Dineke Tigelaar, ICLON, Leiden University, Netherlands; **Co-Author:** Rineke Keijzer, Rotterdam University of Applied Science, Netherlands;

Co-Author: Lysanne Post, ICLON - Leiden University Graduate School of Teaching, Netherlands

Understanding how learners navigate and integrate experiences across educational, work, and everyday contexts is increasingly important for supporting meaningful learning processes and further professional development. This study investigates how students perceive and construct connections between these contexts, and how guidance practices can strengthen learning pathways over time. Drawing on an ecological perspective on learning—which emphasizes the relational interplay between individuals and their learning environments—and a complementary individual perspective focused on students' interest development and identity goals, we explore how learners experience boundaries and transitions across contexts. The research was conducted in three distinct educational settings: secondary vocational education, higher professional education, and academic higher education. Using a mixed-methods design, we examined characteristics of guidance practices, analyzed students' interest profiles through questionnaire data, and conducted in-depth qualitative studies of students' learning experiences both within and beyond their formal programs. Together, these data provide insight into how students draw on work, school, and daily life experiences to shape emerging professional identities and career orientations. The study resulted in a set of design principles for guidance practices that support learning across contexts. These principles are organized according to the perspectives of learners, facilitators, and the broader learning environment. During the session, we will discuss the implications of these principles concerned with: (1) fostering learner agency in career and professional learning, (2) leveraging peer relations as resources for learning, and (3) enhancing the connectivity between learning in education, work, and everyday life.

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M104

Workshop

Higher Education

Learning for complexity: designing transdisciplinary learning configurations

Keywords: Communities of learners and/or practice, Cooperative/collaborative learning, Design-based research, Learning environments

Interest group: SIG 14 - Learning and Professional Development

Learning for complexity: designing transdisciplinary learning configurations

Keywords: Communities of learners and/or practice, Cooperative/collaborative learning, Design-based research, Learning environments

Presenting Author: Wietske Kuijer, HAN University of Applied Sciences & Radboudumc, Netherlands; **Presenting Author:** Hans Savelberg, Maastricht University, Netherlands; **Co-Author:** Janina den Hertog, Saxion University of Applied Sciences, Netherlands; **Co-Author:** Nienke Nieveen, Eindhoven University of Technology, Netherlands; **Co-Author:** Irene Visscher-Voerman, Saxion University of Applied Sciences, Netherlands; **Co-Author:** Klaas-Jan Visscher, University of Twente, Netherlands

This contribution reports on a four-year collaborative project involving a consortium of eleven Dutch Higher Education Institutes (HEIs). The project aims to identify principles for designing and implementing sustainable educational configurations that foster transdisciplinary co-learning among students, teachers, and external stakeholders. Using a cyclical educational design research approach, the project investigates three core challenges: (1) enabling co-learning, (2) scaffolding transdisciplinary learning, and (3) embedding transdisciplinary education sustainably within higher education curricula. Through iterative cycles of analysis, redesign, and evaluation, the project works towards a validated, context-sensitive framework that identifies effective strategies for fostering transdisciplinary learning across diverse higher education contexts. This workshop takes preliminary design principles formulated halfway the project as its starting point. By engaging in systematic and guided discussion based on these design principles, experiences and theoretical insights of individual participants are being made explicit and brought together. In this way, participants will gain in-depth insight into the design of transdisciplinary education and at the same time make a valuable contribution to refining the design principles.

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M3

Single Paper

Teaching and Teacher Education

Teacher Learning, Collaboration and Professional Development

Keywords: Design-based research, Instructional design, Learning environments, Quantitative methods, Self-efficacy, Teacher/trainer professional development, Teamwork, Workplace learning

Interest group: SIG 14 - Learning and Professional Development

Chairperson: Yuanyuan Zhu, Maastricht University, FHML, Dept. of Educational Research and Development, Netherlands

Advancing Pedagogical and Design-thinking Learning through Classroom-Based Design-Based Research

Keywords: Design-based research, Teacher/trainer professional development, Teamwork, Workplace learning

Presenting Author: Sarah Fitri, University of Cambridge, UK, United Kingdom; **Co-Author:** Yeni Istiyani, SMPN 1 DAMPIT, Indonesia; **Co-Author:** Nurani Fitriana, SMP Mamba'Unnur Bululawang, Indonesia

Design-Based Research (DBR) positions teachers as investigators of their own practice through iterative design, integrating professional learning with daily classroom activities. Despite its growing adoption, the specific mechanisms by which DBR develops pedagogical expertise remain underexplored. This qualitative case study examines how two secondary English language teachers in rural schools developed pedagogical expertise and design thinking during a seven-month classroom-based DBR project, situated within a broader iterative teacher professional development program. The teachers designed lessons using newly acquired pedagogical frameworks, adapted and implemented these lessons, collected evidence of student learning, engaged in systematic reflection with researcher support, and refined their approaches through multiple iterations. Semi-structured interviews (60–90 minutes each) were analyzed using thematic analysis, which identified six learning mechanisms through which classroom-based DBR fosters teacher learning: iterative cycles that enable continuous refinement, authentic challenges that promote creative problem-solving, pedagogical frameworks that facilitate strategic thinking, observable student outcomes that validate innovations, paradigm shifts that transform teaching conceptions, and reconceptualized success criteria that sustain practice change. These mechanisms were reflected in observable changes in teaching practice, including redefined instructional purposes, diagnostic application of frameworks, resourceful problem-solving within constraints, and revised success criteria emphasizing student engagement. For EARLI SIG 14 scholarship, this study demonstrates that systematic inquiry can become integral to daily practice, merging learning with work and offering implications for workplace learning theory, design education, and professional development policy.

Effects of workplace learning in schools on first-year student teachers' practice self-efficacy

Keywords: Quantitative methods, Self-efficacy, Teacher/trainer professional development, Workplace learning

Presenting Author: Tine Nielsen, UCL University College, Odense, Denmark

Self-efficacy is a central concept in teacher education as it impacts student learning processes and outcomes and vice versa. The study investigates the effects of workplace experience with teaching and teaching-related practices on seven dimensions of first-year student teachers' practice self-efficacy (measured with the Practice Self-Efficacy Questionnaire, PSEQ), as 1) the cross-sectional effect of workplace experience *prior to starting teacher education* and 2) the longitudinal effect as changes in practice self-efficacy across a work placement experience *during the first semester of teacher education*. Results confirmed our expectation that students with workplace teaching experience *prior to starting teacher education* had higher practice self-efficacy. Results partially confirmed our longitudinal expectations, as directions of changes in practice self-efficacy over the course of three months with eight single days of workplace experience were as expected for six of seven practice self-efficacy, though for four dimensions effect sizes were very small. Two dimensions showed a medium effect size, on one dimension for all students, on the other dimension only for students *without workplace teaching experience prior to starting teacher education*. The last dimension showed no change. The study is the first to study the effect of workplace teaching experience before and during the first year of teacher education on student teachers' practice self-efficacy.

PLCs and Teacher Retention Intentions: LPA of Shanghai and Flanders Language Teachers in TALIS 2024

Keywords: Learning environments, Quantitative methods, Teacher/trainer professional development, Teamwork

Presenting Author: Yujiao Liu, KU LEUVEN, Belgium; **Co-Author:** Katrien Vangrieken, KU LEUVEN, Belgium; **Co-Author:** Ilke Grosemans, KU LEUVEN, Belgium

Professional Learning Communities (PLCs) are widely promoted as a strategy for improving teacher retention. However, much empirical research conceptualizes PLCs as a single continuum of participation, implicitly assuming that more collaboration leads to better outcomes. This approach overlooks important differences in how collaboration, participatory governance, and teacher leadership are jointly experienced in schools. Adopting a person-centered perspective, this study examines heterogeneous PLCs profiles and their associations with teachers' retention intentions across educational contexts. Using lower-secondary language teacher data from Shanghai and Flanders in TALIS 2024, Latent Profile Analysis identifies three distinct PLCs profiles with strong classification quality: a **High PLCs Participation** profile characterized by intensive collaboration and strong participatory leadership conditions, a **Moderate PLCs Participation** profile reflecting balanced mid-range levels, and a **Low PLCs Participation** profile marked by weak governance and limited leadership opportunities. These findings suggest that teachers are embedded in qualitatively different PLCs environments rather than simply participating more or less frequently. Multi-group analyses demonstrate a shared three-profile structure across contexts, alongside higher enacted collaboration levels and different profile distributions in Shanghai compared to Flanders. Distal outcome analyses show that PLCs profiles are significantly associated with teachers' attrition risk, but not with expected years of continued teaching. Only teachers in the High PLCs Participation profile report significantly lower attrition risk, indicating a threshold effect whereby PLCs support retention only when collaboration is embedded within strong participatory governance and teacher leadership.

How effective teaching behaviour unfolds in team teaching: A temporal-spatial analysis

Keywords: Instructional design, Learning environments, Teacher/trainer professional development, Teamwork

Presenting Author:Aron Decuyper, Ghent University, Belgium; **Co-Author:**Mathea Simons, University of Antwerp, Belgium; **Co-Author:**Ruben Vanderlinde, Ghent University, Belgium

Team teaching has gained increasing prominence in education, yet empirical insight into how effective teaching behaviour unfolds within it remains limited. This study examines how experienced team teachers enact effective teaching behaviour across time and space. Using a multiple case study design, video data from two experienced team-teaching teams (four teachers) were analysed using the ICALT observation framework (van de Grift, 2007). A fine-grained, second-by-second temporal coding approach was applied, complemented by spatial heatmap analyses. Results show that effective teaching behaviour is highly dynamic and phase-dependent: teachers prioritise dimensions of effective teaching behaviour such as clarity of instruction, classroom management, or activating teaching depending on lesson phase, student grouping, and role distribution. Spatially, teachers' positioning and movement varies substantially, but these patterns were shaped primarily by organisational and contextual constraints rather than by teaching quality of behaviour per se. Importantly, effective teaching behaviour emerged through complementary role-taking between teachers, illustrating how collaborative teaching structures the enactment of teaching practices. The findings contribute to a more nuanced understanding of effective teaching behaviour in team teaching contexts by highlighting the temporal-spatial dynamics.

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M2

Symposium

Learning and Instructional Technology, Lifelong Learning

AI, Work, and Learning as Epistemic Practice: A Sociocultural and Sociomaterial Reframing

Keywords: Artificial Intelligence, Communities of learners and/or practice, Computer-assisted learning, Computer-supported collaborative learning, Cooperative/collaborative learning, Digital literacy, Technology-enhanced learning, Vocational education and apprenticeship training

Interest group: SIG 14 - Learning and Professional Development

Chairperson: David Guile, United Kingdom

Organiser: Jelena Popov, UCL, United Kingdom

Discussant: Asa Makitalo, University of Gothenburg, Sweden

This symposium aims to collectively advance a sociocultural and sociomaterial understanding of AI and large information systems as active epistemic partners that reshape, not merely augment, human activity and meaning-making by examining working and learning practices in education, healthcare, and high-stakes assessment. All four contributions show how human–AI relations generate new forms of knowing, doing, and learning that must be continuously negotiated, interpreted, and stabilised within the cultural, material, and institutional conditions of specific settings. Each paper highlights different facets of this reconfiguration: the first paper by foregrounding how inferential prompting within a hybrid Zone of Proximal Development enables relational authorship enabled by continuous recontextualisation, and evolving forms of negotiation between humans and LLMs; the second illuminates how the introduction of new digital systems in healthcare requires configuration work in which collective epistemic practices are transformed and technologies become locally repurposed; the third demonstrates how ML-driven scoring infrastructures redistribute cognitive and communicative labour across an assessment ecosystem, generating new genres of speaking and learning under conditions of algorithmic opacity. The fourth paper provides new epistemic practices to facilitate human-machine interaction in mechanical engineering, thereby promoting the practical extension of situated learning and distributed cognition in the AI era. Taken together, the studies reveal how AI's introduction into professional and educational practices is shaped by sociomaterial arrangements, disciplinary norms, and evolving expectations about authority, interpretation, and legitimacy. They jointly argue for conceptualisations of agency—relational, epistemic, and dialogic—that capture how humans, technologies, and organisational structures coproduce outcomes.

Making novel technology work: Analysing emerging human-technology configurations in primary care

Presenting Author:Monika Nerland, University of Oslo, Norway; **Co-Author:**Ida Martinez Lunde, Institutt for pedagogikk, Norway

Professional work is realised in complex interaction between humans and increasingly powerful technologies, whose role goes far beyond the mediating devices of previous times. Today's emerging technologies are often of an epistemic kind, in the sense that they contribute actively to generating knowledge, performing analytical processes, and suggesting actions to be taken in specific instances of work. When introduced anew to work communities, they generate disruptions. Rather than being 'ready-made' for use, features of the technology as well as established and emerging work practices must be examined, configured, and reconfigured locally for the technology to become useful in specific work settings. This paper presents insights from a recent ethnographic study in primary care. We examined configuration work in nursing homes in different phases of the introduction of a new patient information system: when developing ideas and visions for the technology in use, when constructing training materials and reconsidering work tasks, and when integrating the technology into daily work routines. We show how these efforts implied a series of epistemic practices, through which collective ways of knowing in the nursing homes were transformed and the technology was repurposed. We argue a need to move beyond skills-task adaptation in our understanding of what it implies to (re)configure digital technologies and work practices to each other, and to recognise the need for epistemic agency in these processes.

Learning and Working with Large Language Models in a hybrid Zone of Proximal Development

Presenting Author:David Guile, UCL Institute of Education, United Kingdom; **Co-Author:**Elly Selby, UCL, United Kingdom

The emergence of machine learning with a capability to learn by discerning patterns in data and the subsequent development of its architecture as Large Language Models (LLM) capable of learning word sequences and both capable of continuously responding to human prompts about their responses. The paper firstly, highlights the limitations of augmentation as a way of conceptualising human-LLM working and learning. Secondly, conceptualises that relationship as a) occurring in a hybrid Zone of Proximal Development (ZPD), where LLMs serve as a new kind of experienced other, and b) entailing a process of "continuous recontextualization" facilitated by inferential prompting. Thirdly, identifies the way in which disciplinary-professional socio-cultural-material practices facilitate the process of prompting and the interpretation, explanation and further recontextualization of the outputs of human-LLM working and learning in relation to an object of an inquiry. The paper presents findings from a workshop that required three student groups to work in interdisciplinary combinations on a set task using an LLM. It identifies three different types – continuous negotiation, pragmatic negotiation and jurisdictional negotiation – of working and learning in the hybrid ZPD, and how those relationships generated three different types of recontextualization and three different outcomes to the task. The paper concludes by arguing that concept of relational authorship describes, more comprehensively, how ideas, interpretations, and design decisions are co-produced through negotiation, continuous recontextualization, and inference within a hybrid ZPD.

'It is like talking to Siri' - an emerging communication genre in an AI reconfigured English test

Presenting Author:Jelena Popov, UCL, United Kingdom

The rapid development of artificial intelligence (AI) technologies grounded in machine learning (ML) algorithms has significantly reshaped human activity across multiple domains, including high-stakes educational assessment, the focus of this presentation. Drawing on the case of the Pearson Test of English Academic (PTE-A), we examine how language assessment has been reconfigured through the integration of ML-driven scoring systems. In this context, speech performance is evaluated through software, speech recognition, and ML algorithms, while the principles underpinning scoring remain largely opaque to test takers. We argue that this opacity has contributed to a historically novel entanglement of human and AI roles within assessment practices, giving rise to new modes of speaking and learning that deserve the attention of researchers. The paper's analysis is informed by sociocultural and sociomaterial perspectives on human-machine learning, alongside Bakhtinian notions of the dialogic mind and the related concepts of responsivity and communication genres. The findings illustrate how ML-based assessment systems are producing new forms of speech and learning that reflect a redistribution of cognitive and communicative labour across the testing ecosystem consisting of test providers, test takers, test centres and an intermediary network of individuals and organisations dedicated to interpreting the 'black box' of AI-driven assessment.

Large Language Models and Mechanical Engineering: A New Model of Human-Machine Learning

Presenting Author:Ying Liang, Zhejiang university, China

With the rise of large language models (LLM), traditional engineering education models of human-machine interaction have struggled to adapt to the new cognitive paradigm of human-machine interaction, resulting in new challenges for the integration of theory and practice and the absence of intelligent support. This paper aims to propose a framework that integrates instructional design, situated learning, and distributed cognition, to provide a new perspective for examining human-LLM collaborative learning in the field of mechanical engineering. The framework takes the construction of a "human-LLM collaboration" relationship based on sustained interaction between undergraduate engineering students and LLMs as its core, rather than a unidirectional assistance model. Relying on two work modes: a single work mode focused on task decomposition and simple question answering, and a diversified work mode emphasizing constraint handling and multi-window parallelism, the framework forms six learning pathways that correspond to the four

stages of Challenge-based Learning, thereby constituting a hierarchically structured human–LLM collaborative cognitive system. Based on this framework, the paper develops an engineering learning support system centered on LLMs. Practical validation is currently being conducted with second-year mechanical engineering undergraduates in China, with the aim of further optimizing the framework itself through practice.

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M3

Single Paper

Lifelong Learning

Competence Development and Learning in Professional Practice

Keywords: Adult education, Competencies, Cultural diversity, Informal learning, Intercultural competence, Life-long learning, Mixed-method research, Qualitative methods, Transfer of learning, Workplace learning

Interest group: SIG 14 - Learning and Professional Development

Chairperson: ASTRID CAMILLA WIIG, Norway

Continuity of Workplace Learning: Insights from Finnish Police and Technology Organizations

Keywords: Informal learning, Life-long learning, Transfer of learning, Workplace learning

Presenting Author: Soila Lemmetty, University of Eastern Finland, Finland

Since the early 2000s, continuous learning has dominated adult-education research and policy, yet the notion of continuity within learning remains elusive. This article interrogates what continuity means in workplace learning, distinguishing it from the narrower concept of continuous education. Drawing on thematic interviews (n = 50) and mobile diaries (n = 13) from Finnish police and technology organizations, I conduct thematic analysis to build an analytically grounded definition of continuity and provide an empirically based description of its forms. Findings reveal that employees construct continuity through four interrelated dimensions: temporal, contextual, collegial and cumulative. Based on these, I identify two overarching forms of continuity in workplace learning: integration and expansion. By clarifying the essence of continuity, the study advances theoretical debate on adult continuous learning, illuminates the embedded nature of ongoing competence renewal, and offers practical guidance for sustaining development in contemporary workplaces.

Changing competency profiles as a driver for workplace learning and employability in logistic SMEs

Keywords: Competencies, Life-long learning, Mixed-method research, Workplace learning

Presenting Author: Eline Bens, AP University of Applied Sciences and Arts Antwerp, Belgium; **Co-Author:** Elena Van den Broeck, AP University of Applied Sciences and Arts Antwerp, Belgium; **Co-Author:** Siham Chaoui, AP University of Applied Sciences and Arts Antwerp, Belgium; **Co-Author:** Sven Buyle, AP University of Applied Sciences and Arts Antwerp, Belgium

This research focuses on workplace learning for blue-collar workers in small and medium sized enterprises (SMEs), using the warehouse context as a case study. In industries undergoing rapid digitization, such as logistics, workplace learning is often constrained by limited resources, non-standardized processes, and the diversity of workers' backgrounds and skills. By applying the Educational Design Research (EDR) methodology, this paper examines how scientific findings can be translated into practical tools that address the specific learning needs of blue-collar workers. In the first phase of this research, multiple data collection methods were used, including surveys, focus groups, and interviews, to gain an in-depth understanding of the required competencies, learning needs, and work context of these blue-collar workers. The results show a shift from the blue-collar worker as a physical performer to a process-driven operator who needs both technical and soft skills. Three concrete outputs have been developed: competency profiles, personas, and service blueprints, which help employers and trainers integrate workplace learning more effectively. These outputs do not only provide a theoretical framework but also form the basis for the *Design & Construction* phase of the EDR methodology, in which scenarios and learning materials are further developed and evaluated through pilot projects. The research emphasizes the integration of soft skills, safety competencies, and basic digital skills in both entry-level and continuing education programs and demonstrates how learning in SMEs is most sustainable when it is directly intertwined with daily work practices.

Validation of the work-related learning scale in Finland among highly educated employees

Keywords: Adult education, Informal learning, Life-long learning, Workplace learning

Presenting Author: Kristiina Räihä, Häme University of Applied Sciences, Finland; **Co-Author:** Katja Vähäsantanen, Häme University of Applied Sciences, Finland; **Co-Author:** Sami Löfgren, Häme University of Applied Sciences, Finland; **Co-Author:** Heta Rintala, Häme University of Applied Sciences, Finland

This study examines highly educated Finnish employees' work-related learning (WRL) by (1) validating a Finnish version of the WRL scale; (2) observing employees' participation in informal environmental, informal personal, and formal WRL; and (3) exploring the associations of the WRL dimensions, work characteristics, and work wellbeing related factors. A cross-sectional survey collected via two different professional sectors in Finland representing engineering (n=1167) and business (n=606), yielding N=1773 employed respondents. WRL was measured with a 15-item Work-Related Learning scale by Grosemans and others (2020), that was translated into Finnish and supplemented with item on generative AI use. In addition, demographics, work engagement (UWES-3), and single item measures regarding autonomy, working in networks, task predictability, challenges in recovery, and job satisfaction were measured. Psychometric testing used stratified split-sample EFA and CFA, multi-group CFA invariance, and Fornell–Larcker validity checks. Missing data were handled with MICE, and hierarchical regressions were pooled using Rubin's rules. A refined 13-item Finnish WRL scale supported a three-factor structure with good fit, sector scalar invariance, and adequate reliability and convergent/discriminant validity. Participation in informal WRL was found to be more frequent than in formal learning. Work characteristics (autonomy, working in networks, task predictability), and work engagement were found to be the primary correlates of higher participation in work-related learning across all dimensions. The validated Finnish WRL measure and the findings on correlates of distinct WRL dimensions inform further research and evidence-based workplace practices to strengthen learning-conducive work environments.

Intercultural Competence in Action: Police Students' Stories of Work

Keywords: Adult education, Cultural diversity, Intercultural competence, Qualitative methods

Presenting Author: Katja Koykka, University of Eastern Finland, Finland; **Co-Author:** Soila Lemmetty, University of Eastern Finland, Finland; **Co-Author:** Heta Rintala, Häme University of Applied Sciences, Finland; **Co-Author:** Katja Vähäsantanen, Häme University of Applied Sciences, Finland

Professional competencies have been widely studied in the workplace and professional learning. However, intercultural competencies have received less attention. This study examines how police students describe intercultural competence and how it is manifested in practical actions through their stories. Data comprising 84 stories were collected from police students in Finland using the method of empathy-based stories (MEBS), with participants composing short imaginary stories based on frame stories designed by the researcher. Students were asked to visualize a situation in which they responded to a domestic disturbance call involving an immigrant family and then asked why the police response succeeded or failed. The stories were analysed using thematic analysis, and vignettes were produced to demonstrate variations between successful and failed domestic disturbance tasks from the perspective of the actualization of intercultural competence. The findings demonstrate that intercultural competence emerges from the dynamic interplay of professional, methodological, social, and personal competences. The findings have practical applications in police training and organizational contexts, as well as within rescue, security, and other service sectors. The results are relevant to adult education and the development of training programs aimed at enhancing intercultural competence, management capabilities, and diversity skills. For educational practice, this research emphasizes the need to integrate intercultural competence into training programs. Educational institutions should focus on developing communication and emotional skills alongside legal and procedural knowledge. Additionally, workplace learning should foster continuous reflection on intercultural encounters, promoting adaptability and openness.

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M103

Roundtable

Assessment and Evaluation, Learning and Social Interaction

Connecting School, Work and Assessment in Vocational Learning

Keywords: Assessment methods, Cooperative/collaborative learning, Learning environments, Social aspects of learning and work, Vocational education and apprenticeship training, Work-based learning, Workplace learning

Interest group: SIG 14 - Learning and Professional Development

Chairperson: Veronika Anselmann, University of Education Schwäbisch Gmünd, Germany

Mapping the Research Field on Learning Location Cooperation in VET: A Scoping Review

Keywords: Cooperative/collaborative learning, Learning environments, Vocational education and apprenticeship training, Workplace learning
Presenting Author:Jana Schwede, Paderborn University, Germany; **Co-Author:**Christian Harteis, University of Paderborn, Germany

In Germany's dual vocational education and training (VET) system, Learning Location Cooperation (LLC) refers to educational partnerships between vocational schools, companies, and inter-company training centers. Designed to meaningfully connect school-based and work-based learning, LLC has been a prominent topic in vocational education research since the 1990s. However, the existing body of empirical work is dispersed, heterogeneous, and thus difficult to navigate. Therefore, this scoping review seeks to systematically map research on LLC in the German VET context over the past three decades. Following established scoping review methodology and the PRISMA-ScR guidelines, empirical publications are analyzed based on their theoretical underpinnings, methodological approaches, and key research interests. The inclusion criteria cover thematic relevance, a focus on Germany's dual system (due to its distinct structural features), and require accessibility in either German or English. A comprehensive search strategy is applied, incorporating the use of several databases, manual screening of relevant vocational education journals, citation tracking, and the examination of field-leading author publication lists. By offering a structured overview of existing empirical work, this review aims to advance understanding of the field's conceptual foundations and research developments while laying the groundwork for a future-oriented research agenda on LLC that responds to contemporary challenges in VET – particularly against the background of digital transformation and sustainability demands.

Strengthening co-construction in Hybrid Learning Environments: Tools and future directions

Keywords: Learning environments, Social aspects of learning and work, Vocational education and apprenticeship training, Workplace learning

Presenting Author:Erica Bouw, HU University of Applied Sciences, Netherlands; **Co-Author:**Franck Blokhuis, MBO Amersfoort (Secondary Vocational Education and Training institute), Netherlands; **Co-Author:**Evelien Ketelaar, HU University of Applied Sciences Utrecht, Netherlands; **Co-Author:**Miranda Snoeren, Fontys University of Applied Sciences, Netherlands; **Co-Author:**Marianne Wildeman, MboRijnland, Netherlands

Hybrid learning environments at the school-work boundary increasingly rely on co-construction processes in which educators and practitioners collaboratively design, enact, and strengthen educational arrangements. Although research highlights the importance of strategic, tactical, and operational alignment, the mechanisms through which co-construction develops and how it can be supported remain insufficiently understood. In this research project we conducted a multi-case study across five hybrid learning environments in Dutch upper-secondary vocational education and universities of applied sciences. Using a participatory, design-oriented research approach, we combined interviews, timeline sessions, and site visits to analyse interventions and interactions supporting co-construction. Our findings show that boundary objects, boundary spaces, and boundary crossers play a crucial role in connecting actors, bridging institutional differences, and sustaining collaborative design work. Interestingly, several research instruments used during the study (e.g., timeline sessions) appeared to both generate data and strengthen co-construction within the cases. In this roundtable, we invite participants to discuss:

- (1) what works in fostering co-construction across school-work boundaries;
- (2) how empirical insights can inform the (further) design of tools supporting co-construction;
- (3) to what extent such instruments can serve double purposes as research tools; and
- (4) implications for future research within vocational and professional education.

Reframing assessment practices in authentic learning environments

Keywords: Assessment methods, Vocational education and apprenticeship training, Work-based learning, Workplace learning

Presenting Author:Anne Khaled, HAN University of Applied Sciences, Netherlands; **Presenting Author:**Marlies de Vos, HU University of Applied Sciences, Netherlands; **Co-Author:**Aimee Hoeve, HAN University of Applied Sciences, Netherlands

In this session, we discuss our project that explores how assessment can be improved in authentic learning environments within vocational education and training (VET). Traditional school-based assessments often do not align with what students actually learn in workplace settings, where learning is embedded in daily tasks and guided by multiple assessors with differing expectations. To address this, the project frames assessment as a collaborative process involving students, teachers, and workplace supervisors. The study adapts Chan and Chen's (2023) collaborative assessment framework, originally designed for higher education, to the VET context, where workplace involvement plays a central but under-theorised role. The project aims to produce an adapted framework and practical tools that help schools, workplaces, and students develop shared approaches to collaborative assessment in authentic settings. During the round table session, we seek feedback on the suitability of the chosen theoretical model and discuss how the model may need to be adjusted for VET practice.

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M102

Roundtable

Assessment and Evaluation, Lifelong Learning

Workplace Learning, Innovation and Professional Practice

Keywords: Assessment methods, Design-based research, Learning environments, Life-long learning, Self-regulated learning and behaviour, Workplace innovation, Workplace learning

Interest group: SIG 14 - Learning and Professional Development

Chairperson: Renate Wesselink, Wageningen University, Netherlands

Learning to be innovative: Employees' learning and innovation in the workplace

Keywords: Life-long learning, Self-regulated learning and behaviour, Workplace innovation, Workplace learning

Presenting Author:Karen Schwien, Helmut Schmidt University, Germany; **Co-Author:**Jennifer Liehr, Helmut Schmidt University Hamburg, Germany

Against the backdrop of the digital transformation, employees' learning and innovation activities are gaining significance for organisations. Prior research suggests that learning in the workplace is linked to innovative work behaviour. However, the understanding of how workplace learning (WPL), self-regulated learning (SRL) and innovative work behaviour (IWB) are linked, and of the role of the organisational context, remains limited. Our study aims to provide empirical evidence of the correlation between learning and the phases of innovative work behaviour. To this end, we distribute an online questionnaire to a targeted sample of 3,000 employees. The questionnaire measures the aforementioned constructs using scales for workplace learning activities (WLA), self-regulated learning (SRL), innovative work behaviour (IWB), and contextual factors such as learning climate, the workplace learning context, and psychological safety. Structural equation modelling will be used to analyse the data. Sample recruitment is ongoing. We expect to contribute to an understanding of learning in the workplace as a strategic resource for innovative organisations and employees.

Evaluating physiotherapists' treatment practices in the workplace following professionalization.

Keywords: Assessment methods, Design-based research, Life-long learning, Workplace learning

Presenting Author:Han van Dijk, HU University of Applied Sciences Utrecht, Netherlands; **Co-Author:**Albère Köke, Maastricht University, Netherlands; **Co-Author:**Mariëtte Goossens, Maastricht University, Netherlands; **Co-Author:**Ilya Zitter, Hogeschool Utrecht (University of Applied Sciences Utrecht), Netherlands; **Co-Author:**Rob Smeets, Maastricht University, Netherlands

Integrating new scientific insights into clinical practice is often slow and incomplete, as seen in physiotherapeutic care for chronic pain where a biopsychosocial (BPS) perspective is recommended but challenging to apply. Physiotherapists report insufficient knowledge, skills, and confidence to work from this perspective, while traditional professional development initiatives tend to emphasize knowledge acquisition rather than changes in work behavior. As part of PhD research, a work-integrated learning program was co-designed to support physiotherapists in developing BPS-informed competencies through participation in authentic clinical activities. The presented study examines whether and how these competencies are enacted in daily practice. To capture treatment practices from a BPS perspective, participating physiotherapists recorded real-world consultations. The study consists of two phases: (1) developing and validating a research instrument to assess BPS-informed practices, and (2) calibrating with expert assessors and evaluating the audio recordings to produce a qualitative description of enacted behaviors. The expected outcomes include a validated research instrument, a calibrated panel of expert assessors, and an empirically grounded description of BPS-informed treatment practices at the workplace. This work addresses the challenge of evaluating complex, individualized physiotherapeutic care and aims to advance understanding of how work-integrated learning supports the development and enactment of changed professional behavior.

Exploring Mechanisms of Workplace Learning in Dutch Youth Care

Keywords: Design-based research, Learning environments, Life-long learning, Workplace learning

Presenting Author:Miriam Mayer, Open University of the Netherlands, Netherlands; **Co-Author:**Annoesjka Boersma, Hogeschool Utrecht, Netherlands; **Co-Author:**Leonieke Boendemaker, Hogeschool van Amsterdam, Netherlands; **Co-Author:**Elly de Bruijn, Open University of the Netherlands, Netherlands

Learning in and through daily work is increasingly recognized as essential for improving the quality of youth care in the Netherlands. Yet, in both research and

practice, work-related learning in Dutch youth care is often separated from daily work and organized through formal education outside the workplace, limiting its impact on the professionals' practice. Therefore, this PhD research focuses on workplace learning in youth care, as an underexplored form of work-related learning in which learning and work are intertwined, and may be organized and intentional to varying degrees. Grounded in socio-cultural perspectives, learning is conceptualized as continuous, participatory, and situated, emerging through the interaction between workplace opportunities for learning and professionals' engagement with them. Adjustments to the work environment can enhance learning opportunities and thus better foster workplace learning. The PhD project comprises design-based research with the aim of co-constructing, together with youth care professionals, work environments that foster workplace learning. The first, exploratory research phase addresses the question: How do work environments foster professionals' engagement in workplace learning, according to empirical literature and current practices in Dutch youth care? This round table presents preliminary findings from the exploratory phase, based on a literature review and interviews with professionals from three youth care organizations. The audience is invited to reflect on the findings and their implications for the subsequent design phase.

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M104

Workshop

Learning and Social Interaction

Cross-boundary teaming in learning environments at the boundary of school and work

Keywords: Learning environments, Teamwork, Vocational education and apprenticeship training, Workplace learning

Interest group: SIG 14 - Learning and Professional Development

Cross-boundary teaming in learning environments at the boundary of school and work

Keywords: Learning environments, Teamwork, Vocational education and apprenticeship training, Workplace learning

Presenting Author: Ilya Zitter, Hogeschool Utrecht (University of Applied Sciences Utrecht), Netherlands; **Co-Author:** Lotte Bus, HAN University of Applied Sciences, Netherlands; **Co-Author:** Elco Buurma, HU University of Applied Sciences Utrecht, Netherlands; **Co-Author:** Josien Engels, HU University of Applied Science Utrecht, Netherlands; **Co-Author:** Aimee Hoeve, HAN University of Applied Sciences, Netherlands; **Co-Author:** Anne Khaled, HAN University of Applied Sciences, Netherlands

Connectivity between school and work is important for helping (future) professionals face contemporary technological and social developments that change the workplace. Connectivity between school and work can be designed through learning environments at the boundary of school and work, fostering close collaboration between educational and workplace partners. Yet, it calls for overcoming challenging aspects of variable team composition, fluidity and 'on the fly' way of working as conceptualized by Edmondson as cross-boundary teaming. Cross-boundary teaming is seen as the way a team collaborates across the boundaries of multiple organizations and organizational units. The project "Teaming in the Interspace" aims to strengthen cross-boundary teaming in learning environments at the boundary of school and work. Through a cyclic design process together with the practitioner researchers of each of the four learning environments involved, a tool to diagnose and strengthen cross-boundary teaming was developed and tested. In this workshop, participants will gain increased awareness of the challenges of cross-boundary teaming, become familiar with the developed tool to support cross-boundary teaming through hands-on experience, and jointly reflect on the theoretical groundings, methodology and practical implications of this tool.

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M101

Workshop

Teaching and Teacher Education

Using the NIoT Evidence Portal: Tools for Research and Practitioner-Led Questions

Keywords: Career development, Leadership development, Teacher/trainer professional development, Technology-enhanced learning

Interest group: SIG 14 - Learning and Professional Development

Using the NIoT Evidence Portal: Tools for Research and Practitioner-Led Questions

Keywords: Career development, Leadership development, Teacher/trainer professional development, Technology-enhanced learning

Presenting Author: Roisin Ellison, The National Institute of Teaching, United Kingdom; **Co-Author:** Lia Commissar, The National Institute of Teaching, United Kingdom; **Co-Author:** Melissa Bond, The National Institute of Teaching, United Kingdom; **Co-Author:** Marta Ciesielska, The National Institute of Teaching, United Kingdom; **Co-Author:** Malcolm Drakes, The National Institute of Teaching, United Kingdom; **Co-Author:** Ollie Brady, The National Institute of Teaching, United Kingdom; **Co-Author:** Rebecca Underwood, The National Institute of Teaching, United Kingdom

This workshop introduces the National Institute of Teaching (NIoT) Evidence Portal, a free, co-created platform designed to make international research on professional learning accessible, meaningful, and usable in everyday educational work. Developed through an iterative design process involving teachers and school leaders, the Portal integrates global systematic evidence on teacher learning with practice-generated insights. This collaborative methodology ensures that methodological rigour is paired with practical relevance, enabling evidence to be translated into strategies that address real professional development challenges in schools. By embedding practitioner perspectives throughout development, the platform remains responsive to evolving needs while staying grounded in the everyday realities of educational practice. Participants will explore three core features of the Portal—the Evidence Toolkit strands, the practitioner-generated "Your Questions" section, and the developing Evidence Gap Map—and gain hands-on experience using a structured evidence-mapping tool; the EPPI Mapper. Together, these features illuminate where evidence is strong, emerging, or absent, while also surfacing the real questions arising from the profession, thereby informing future research and policy priorities. The workshop will also outline the Portal's ongoing mixed-methods formative evaluation, which examines adoption, usability, and its effectiveness as a knowledge-brokering mechanism. By the end of the session, participants will understand how the Portal's methodological architecture supports informed decision-making for practitioners, enables robust identification of research priorities, and guides the design of future studies grounded in workplace realities.

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M107

Workshop

Learning and Social Interaction

Professional learning in academia: a game-based workshop

Keywords: Career development, Game-based learning, Reflection, Workplace learning

Interest group: SIG 14 - Learning and Professional Development

Professional learning in academia: a game-based workshop

Keywords: Career development, Game-based learning, Reflection, Workplace learning

Presenting Author: Frank Leoné, University of Twente, Netherlands; **Presenting Author:** Maaïke Endedijk, University of Twente, Netherlands

Even though academia is often associated with being knowledgeable, academics, like many professionals, have limited time and institutional support for formal learning. This paradox necessitates a thorough understanding of how academics can self-regulate their own learning and support each others' informal professional learning. However, relevant research is scarce and is either descriptive and conceptual in nature, or is focused on the development of teaching skills, making it less valuable for application to develop as a well-rounded academic. In this workshop, we will integrate research on professional learning with the academic context and needs through a dynamic card game, integrating Rummikub, Scrabble, and discussion mechanics, designed specifically for this purpose. Participants gain insights and inspiration for workplace learning interventions and support in their own academic work and a concrete and adaptable card game that can be used for both group reflection and teaching.

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M2

Single Paper

Cognitive Science, Educational Policy and Systems, Teaching and Teacher Education

Professional Agency, Expertise and Educational Innovation

Keywords: Cognitive skills, Communication skills, Critical thinking, Instructional strategies, Mixed-method research, Qualitative methods, Reflection, Self-regulated learning and behaviour, Social interaction, Teacher/trainer professional development, Teamwork, Transfer of learning, Workplace innovation

Interest group: SIG 14 - Learning and Professional Development

Chairperson: Verena Watzek, University of Regensburg, Germany

From Delivery to Development: Teachers' Professional Agency in SEL Program Implementation

Keywords: Instructional strategies, Mixed-method research, Self-regulated learning and behaviour, Teacher/trainer professional development

Presenting Author: Triin Ulla, Tallinn University, Estonia

Over the past decades, evidence-based social-emotional learning (SEL) programs have demonstrated positive effects on students' academic and socio-emotional development (Durlak *et al.*, 2011; Cipriano *et al.*, 2023; Taylor *et al.*, 2017). At the same time, growing research has linked early childhood screen exposure to difficulties in attention regulation and broader learning challenges (e.g., Jourdain *et al.*, 2023; Liu *et al.*, 2023; Muppalla *et al.*, 2023), underscoring an increasing need for effective school-based supports. However, program effectiveness depends strongly on implementation quality (Durlak & DuPre, 2008; Humphrey *et al.*, 2018), which varies considerably across classrooms. Implementation research has often framed teachers as program implementers or service providers responsible for delivering interventions with fidelity (Durlak & DuPre, 2008; Proctor *et al.*, 2011), underrepresenting the professional agency and reflective processes through which instructional change is sustained. This study explores how implementation quality of the PAX Good Behavior Game (PAX GBG) emerges through teachers' professional agency and development-oriented contexts in Estonian schools. Using a mixed-methods cross-case design, quantitative fidelity data informed extreme-case sampling, followed by semi-structured interviews with fourteen teachers. Qualitative cross-case analysis examined how teachers engaged with program implementation across mentoring, collaborative reflection, and school culture. Preliminary findings indicate that high-quality implementation is associated with reflective practice, strong ownership of pedagogical change, holistic and consistent program use, and engagement in supportive professional environments, whereas lower implementation quality was characterized by instrumental program use and weaker professional agency. The findings highlight the central role of professional development processes in sustaining high-quality SEL implementation.

Scholarship of Teaching and Learning as a Practice of Professional Learning

Keywords: Critical thinking, Reflection, Teacher/trainer professional development, Transfer of learning

Presenting Author: Daniel Winkler, Hochschuldidaktik Sachsen/Hochschule Zittau/Görlitz, Germany; **Co-Author:** Anita Sekyra, Center of Teaching and Learning in Higher Education Saxony (HDS), Germany

The Scholarship of Teaching and Learning (SoTL) is internationally established as a systematic, research-based approach to investigating and developing teaching and learning practices in higher education. In the field of learning and professional development, SoTL is commonly understood as enabling educators to reflect on and improve their teaching in an evidence-informed manner while contributing to a shared knowledge base of teaching and learning (Felten, 2013; Booth & Woollacott, 2018). Existing literature predominantly conceptualises SoTL through process-oriented models that frame it as a multi-stage research process, from formulating research questions to data collection, analysis, and dissemination (Bishop-Clark & Dietz-Uhler, 2012). While these models strengthen the scholarly status of SoTL, they leave open how reflection develops into systematic critique and how insights become transferable beyond individual teaching contexts. Addressing this gap, the paper pursues a theoretical aim by discussing critical rationalism after Popper as an epistemological orientation for SoTL (Popper, 1975; Keuth, 2011). Critical rationalism is understood as an intellectual stance that structures critique, revision, and provisionality in professional learning processes, thereby deepening existing SoTL process models without replacing them.

Expertise-related differences in visual perception when observing school counselling situations

Keywords: Cognitive skills, Communication skills, Mixed-method research, Teacher/trainer professional development

Presenting Author: Kristina Ackel-Eisnach, University of Kaiserslautern-Landau, Germany; **Co-Author:** Inga Wagner, University of Kaiserslautern-Landau, Germany; **Co-Author:** Josef Strasser, University of Kaiserslautern-Landau, Germany

Counselling research has shown that the development of counselling skills is a multi-layered process in which the processing of visual information and emotional impressions is important. It is assumed that the active and effective perception of key features of a particular situation and their appropriate interpretation help experts to develop a comprehensive view of their clients and their behavior. Experts consider more aspects and refer more often to the specific counselling situation when reflecting on a case. However, little is known about the actual perceptual processes that may lead to such more differentiated perspective on cases. Results of eye tracking studies on other fields have shown significant differences in visual patterns and associated cognitive processing between groups with different levels of expertise. Our project investigates whether such differences may also be found with regard to counseling: To what extent and in what way counselling experts perceive a conversation situation differently from less competent or experienced people? For this purpose, experts, intermediates and novices from educational and psychological counselling practice are examined in a quasi-experimental study with the methods of eye-tracking and 'retrospective thinking aloud'. The results indicate that the comprehensive observation of both dialogue partners, in particular the reactions of the non-speaking person in potentially difficult phases of the conversation, as well as the masking of irrelevant aspects are important aspects of expert perception. This corresponds with findings on the professional perception of teaching as well as on counselling expertise.

Team social network analysis - How are social networks used for sustainable educational innovation?

Keywords: Qualitative methods, Social interaction, Teamwork, Workplace innovation

Presenting Author: Idwer Doosje, Universiteit Utrecht / Hogeschool Utrecht, Netherlands; **Co-Author:** Simon Beausaert, Maastricht University, Netherlands; **Co-Author:** mieke koeslag-kreunen, Hogeschool Utrecht (University of Applied Sciences Utrecht), Netherlands; **Co-Author:** Kristin Vanlommel, University of Antwerp, Belgium

Higher education institutions face increasing pressure to adapt to societal transitions, requiring organisational structures that foster innovation. While teams can generate and implement new ideas, how they mobilise wider support and create sustainable impact in organisations remains insufficiently understood. This study explores the role of boundary crossing and social capital in enabling educational teams to achieve sustainable innovation. Drawing on dimensions of sustainability—length, breadth, depth, and height—we examine how boundary activities circulate resources, secure commitment, and align innovations with organisational structures and beliefs. Using a qualitative team ego social network analysis across 15 innovation teams, we mapped relationships and analysed the meanings of the interactions. Findings show that heterogeneous team roles expand organisational reach, and that bonding, bridging, and linking social capital clarify which resources are mobilised, with whom, and for what purposes. Boundary crossing emerged as a collective effort of teams for sustaining educational innovation. All in all, this study deepens our understanding of how workplace learning fosters innovation in organisations.

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M4

Single Paper

Educational Policy and Systems, Instructional Design, Lifelong Learning

Professional Identity and Career Development Across Transitions

Keywords: Career development, Cooperative/collaborative learning, Feedback, Life-long learning, Longitudinal studies, Mentoring and coaching, Mixed-method research, Policy, Professional identity, Secondary education, Simulation-based learning, Teacher/trainer professional development, Technology-enhanced learning, Vocational education and apprenticeship training

Interest group: SIG 14 - Learning and Professional Development

Chairperson: Wietske Kuijer, Netherlands

An integrated implementation guideline for professional development in education

Keywords: Cooperative/collaborative learning, Policy, Secondary education, Teacher/trainer professional development

Presenting Author: Wouter Scheffhout, University of Antwerp, Belgium; **Co-Author:** Els Tanghe, University of Antwerp, Belgium; **Co-Author:** Charlotte Struyve, KU Leuven, Belgium; **Co-Author:** Vicky Willegems, Vrije Universiteit Brussel (VUB), Belgium; **Co-Author:** Stijn Coussement, VIVES hogeschool, Belgium; **Co-Author:** Iris Willems, Universiteit Antwerpen, Belgium

Within the government contract "Professional Development Guideline" issued by Leerpunt, we integrated two evidence-informed guidelines from the Education Endowment Foundation (EEF) and adapted them to the Flemish context. While both guidelines are already based on extensive review studies, this integrated version incorporates several additional insights, based on recent international and Flemish research. The result is an ideal-typical guideline that offers schools a guiding compass for strategically and sustainably shaping the professional development of their school team. This guideline is not a one-size-fits-all solution. It inspires and supports schools in making their own choices, tailored to their specific context and ambitions. During our session, we will present the structure of the guideline, the core principles, and the supporting materials.

Motivating Overestimating Learners in a Problem-Solving before Instruction Setting

Keywords: Feedback, Simulation-based learning, Technology-enhanced learning, Vocational education and apprenticeship training

Presenting Author:Dave Rexhäuser, Technische Universität Dresden, Germany; **Co-Author:**Jördis Kaepernick, Chair of Vocational Education, TUD Dresden University of Technology, Dresden, Germany, Germany; **Co-Author:**Inga Glogger-Frey, University of Erfurt, Germany; **Co-Author:**Stephan Abele, Chair of Vocational Education, Institute of Educational Vocation and Vocational Didactics, Germany

Problem-solving before instruction (PS-I) has been shown to support learning by fostering knowledge gap awareness—the recognition of missing or incomplete knowledge needed for successful task performance. However, recent findings suggest that these mechanisms may not operate as expected with advanced apprentices. Prior studies revealed low learning gains from digital PS-I interventions. One potential explanation is learners' tendency to overestimate their own performance, which has been associated with reduced awareness of knowledge gaps, higher amotivation, and lower learning effort. Building on a pilot study showing substantial overestimation among vocational learners, the present study examined whether providing performance feedback after a preparatory problem-solving task reduces overestimation and enhances learning effort and learning-related outcomes. In a digital learning environment, 292 automotive technician apprentices completed a diagnostic problem-solving task, estimated their performance, and were randomly assigned to receive fictitious performance feedback or no feedback before engaging with a learning pathway. Results showed pervasive overestimation (mean overestimation: 45 percentage points) across both conditions. Contrary to expectations, feedback did not significantly affect knowledge gap awareness, amotivation, learning effort, or learning outcomes. These findings highlight overconfidence as a critical challenge in PS-I settings and suggest that simple performance feedback may be insufficient to activate productive cognitive and motivational processes in vocational learning contexts.

Unravelling teachers' professional identity during the first year of implementing team teaching

Keywords: Longitudinal studies, Mixed-method research, Professional identity, Teacher/trainer professional development

Presenting Author:Dries Mariën, University of Antwerp, Belgium; **Co-Author:**Bea Mertens, University of Antwerp, Belgium; **Co-Author:**Ruben Vanderlinde, Ghent University, Belgium; **Co-Author:**Elke Struyf, University of Antwerp, Belgium

This study investigates how primary teachers' professional identity evolves during their first year of team teaching. Using an intervention-based, convergent, mixed-methods design, the research examines how different levels of guidance (i.e., no guidance, group sessions only, and group sessions plus coaching) affect four key indicators of teachers' professional identity: occupational commitment, job satisfaction, motivation to teach and self-efficacy. The findings reveal short-term fluctuations in these indicators, highlighting the dynamic nature of professional identity in response to changes in teaching practices. Teachers transitioning from solo to team teaching, particularly those participating in group sessions or coaching, exhibited higher levels of occupational commitment, job satisfaction, and autonomous motivation compared to those with no guidance. Coaching, in particular, was associated with enhanced self-efficacy, allowing teachers to better navigate classroom management and adaptive teaching. The results emphasise the importance of professional development programmes that support collaboration, trust-building, and a balanced approach to autonomy and shared responsibility. These insights contribute to the broader understanding of how professional identity can be supported during educational innovations such as team teaching and offer practical recommendations for enhancing its effectiveness and sustainability.

Retention of newcomers and factors influencing turnover intentions and behavior

Keywords: Career development, Life-long learning, Mentoring and coaching, Professional identity

Presenting Author:Niels van der Baan, Maastricht University, Netherlands; **Co-Author:**Giulia Meinke, Maastricht University, Netherlands; **Co-Author:**Maarit Virolainen, University of Jyväskylä, Finland; **Co-Author:**Simon Beusaert, Maastricht University, Netherlands; **Co-Author:**Inken Gast, Maastricht University, Netherlands

Recent graduates are an important source of talent among hired employees as they bring up-to-date knowledge into the organization. Yet, organizations have difficulties retaining them and recognizing factors influencing their voluntary turnover, which may differ from those influencing voluntary turnover among tenured employees. Graduate employees must adjust to a completely new organizational context and begin developing their identities as professionals. This process is shaped by both affordances and constraints for professional learning. Therefore, the current study presents a review of the factors influencing newcomers' voluntary turnover, including the turnover intentions. To explore the factors influencing the turnover intentions and behavior of recently hired employees, we conducted a literature review of 57 articles from several databases for different disciplines. Our review identifies factors that influence turnover intentions and behavior among recently hired employees. We identified five categories of factors influencing turnover intentions and behavior: pre-joining expectations, person-environment fit, the role of the supervisor, and human resource (HR) practices, and person-related factors. Whilst employee turnover has been studied extensively, this review focusses specifically on factors that influence the turnover intentions and behavior of newcomers.

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M101

Symposium

Lifelong Learning

New ways of data collection and analysis to examine learning and professional development at work

Keywords: Artificial Intelligence, Development, Informal learning, Mixed-method research, Qualitative methods, Quantitative methods, Teamwork, Workplace learning

Interest group: SIG 14 - Learning and Professional Development

Chairperson: Verena Watzek, University of Regensburg, Germany

Organiser: Verena Watzek, University of Regensburg, Germany

Discussant: Vincent Donche, University of Antwerp, Belgium

Employees need to develop themselves to be able to deal with changing environments (e.g., due to new technologies), to adapt their work or be proactive in changing work and organizational processes. For understanding and fostering professional development the complexity of people learning in the context of work needs to be captured. This challenges empirical research. Building upon the knowledge in our scientific community on the possibilities and limitations of research methods for investigating professional development (e.g., Goller et al., 2022; Harteis et al., 2022) this symposium will present additional measurement instruments and data analysis techniques for conducting empirical research, considering the complexity of development of employees and work. The central question is: "*What are possibilities, challenges and limitations of new research instruments and analysis techniques to investigate professional development at work?*" All contributions discuss instruments and tools for data collection and analysis used in the empirical studies (in different work contexts in different countries) with the focus on respectively: the combination of Interview to the Double (ITTD) and Critical Incident Technique (CIT) (Paper 1); ITTD, Episodic Interview Techniques (EIT), and voice messaging (Paper 2), qualitative content analysis and distance-based metrics (Galanter distance metric) (Paper 3), and qualitative data with network analyses, natural language processing, and large language models (Paper 4). This symposium provides new insights into how professionals' development in work contexts can be investigated by discussing the mentioned instruments and techniques as to be able to improve research on learning and professional development in the context of work.

Interview Techniques to examine invisible forms of work and consequential professional development

Presenting Author:Koula Charitonos, The Open university UK, United Kingdom; **Presenting Author:**Regina Mulder, University of Regensburg, Germany; **Co-Author:**Vanessa Hämmerl, University of Regensburg, Germany

This contribution focuses on the *Interview To The Double* (Nicolini, 2009) and *Critical Incident Technique* (CIT) (Flanagan, 1954) as a combined methodological approach for investigating work, organisational activity and professional development. Our aim in this paper will be twofold: firstly, we will introduce and explain how the interview techniques were adopted and applied across two diverse empirical studies: the first, in the context of medical abortion care pathway via telemedicine provided by an independent abortion provider in the UK ($n=14$ staff); the second across varied work contexts undergoing change due to the implementation of new technologies ($n=30$ employees). Secondly, we will reflect on how the combined methodological approach is particularly apt at articulating and representing so-called meta-work that is not-yet recognised or routinely practiced, through the lens of those directly involved in and impacted by

digitalisation initiatives. The main contribution of this symposium paper, thus, is making the methodological approach accessible to others who wish to apply it and discussing how it could be positioned among other methods aiming to capture and offer insights on professionals' development in work-related settings in the context of digitalisation.

Tackling the complexity of professional development: Interviews and voice messaging on genAI

Presenting Author:Karen Schween, Helmut Schmidt University, Germany; **Co-Author:**Tobias Schlömer, Helmut-Schmidt-University/University of the Federal Armed Forces Hamburg, Germany

Research on the complex phenomena of professional development (PD) and workplace learning (WPL) is gaining significance in relation to the digital transformation and the implementation of genAI technologies. Nevertheless, PD research relies on a narrow set of established research methods. Our study on work and learning practices in relation to genAI aimed to tackle the complexity of PD and WPL research based on a method triangulation, which combines the Interview to the Double (ITTD), episodic interview techniques (EPI) and voice messaging (VM). The data is coded and interpreted based on qualitative content analysis to reveal manifest and latent meanings. Our study showed that a method triangulation can create results on the complex and contradicting effects of genAI on work and learning practices and that mobile, digital techniques like voice messaging can enable in-situ, incident-based insights. Limitations were the participants' varying narrative, imaginative and technological competencies as well as their varying affinity for voice messaging, the high level of engagement required by participants and researchers and the complex data set and data analysis. The results contribute to a wider methodological spectrum in PD research and to the enhancement of innovative, digital techniques.

Investigating Team Mental Models in Nursing Using Semantic Similarity and Distance-Based Metrics

Presenting Author:Veronika Anselmann, University of Education Schwäbisch Gmünd, Germany; **Co-Author:**Baerbel Fuerstenau, TU Dresden, Germany; **Co-Author:**Regina Mulder, University of Regensburg, Germany

Professional development in nursing increasingly relies on shared understandings that support coordinated action in complex work settings. Shared understanding can be defined as Team Mental Models (TMM), including shared and organized knowledge about tasks, procedures and relevant environmental aspects. This study examines how TMMs in nursing teams can be elicited and measured, and how they relate to knowledge sharing and team performance. Data was collected from 109 geriatric nurses across 30 teams and from 12 nursing experts. Participants responded to a vignette depicting the task of assisting immobile residents during meals and identifying relevant work activities. Responses were analyzed using inductive qualitative content analysis to construct individual and team-level mental models. TMM similarity and accuracy were quantified using the Galanter distance metric, with similarity assessed as overlap in individual mental models of team members and accuracy assessed relative to an expert's reference model. Results indicate low TMM similarity, i.e. low overlap in task-related knowledge within teams, and even lower TMM accuracy. Knowledge sharing was positively associated with TMM similarity, which in turn was positively related to team performance. The study demonstrates the value of combining vignette-based elicitation, qualitative content analysis, and distance-based metrics to describe and analyze TMMs. At the same time, limitations include reliance on participants' ability to articulate tacit knowledge and ongoing validity concerns regarding the experts' reference model. The findings highlight the relevance of shared cognitive representations for team-based professional development in nursing and give insight into the value of semantic similarity and distance-based analysis.

Adaptive Facilitation of Self-Regulated Professional Learning: A Data Science Perspective

Presenting Author:Martin Rehm, University of Southern Denmark, Denmark; **Presenting Author:**Katrien Cuyvers, University of Antwerp, Belgium

In the complex and rapidly evolving healthcare environment, it is essential for healthcare professionals, such as medical specialists, to engage in continuous learning to ensure the provision of high-quality, evidence-based care. While formal training initiatives are important, the workplace also offers valuable learning opportunities. Self-regulation of professional learning (SRpL) is required to manage daily duties and professional responsibilities while learning. Recent research on SRpL in clinical workplaces, using a combination of long-term observations and in loco stimulated recall interviews, offered important understanding of the process of SRpL and its constituting strategies. Although highly needed, insights beyond the general knowledge that just-in-time, just-in-place, and adaptive support of SRpL are required for and in today's agile work are mostly lacking. We argue that Educational Data Science can provide a valuable complementary perspective for quantitatively assessing SRpL and for providing insights for just-in-time and adaptive support. As a first step towards designing such support, this study introduces a mixed-methods approach, combining sound theoretical conceptualizations and qualitative data with network analyses, natural language processing, and large language models to assess the presence of SRpL strategies during medical specialists' work. Our results suggest that EDS is indeed able to capture elements of SRpL, highlighting where individuals are thriving and where they might need additional support, thereby contributing to a framework in which healthcare professionals can be more easily supported while managing their busy daily lives.

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M2

Symposium

Learning and Social Interaction

The Social Side of Development: Social Networks in School Improvement and Professional Development

Keywords: Development, Informal learning, Leadership, Secondary education, Social aspects of learning and work, Social interaction, Work-based learning, Workplace innovation, Workplace learning

Interest group: SIG 14 - Learning and Professional Development

Chairperson: Marco Galle, Switzerland

Discussant: Jasperina Brouwer, University of Groningen, Netherlands

Educational research broadly agrees that social relationship structures and actors' activities are mutually constitutive: who interacts with whom shapes what becomes possible in professional development and school improvement. From a relational perspective, development processes unfold in complex constellations of direct and indirect ties through which information, support, and other resources circulate. Yet, empirically capturing this complexity remains challenging, particularly when networks change over time and when resources are mobilised across organisational and professional boundaries. The symposium aims to discuss theoretical and methodological approaches for studying the interplay of social structures and professional development, and school improvement. We present four complementary studies using quantitative, qualitative, and mixed-methods social network approaches. Contribution 1 applies a longitudinal perspective to examine how networks of school leaders and teacher leaders evolve over one school year in relation to collaborating on evidence-informed practices, and how perceptions of evidence use and learning-organisation capacity relate to tie formation. Contribution 2 links social capital and professional agency by analysing instrumental and expressive ties among school staff and examining how networked social resources correspond with dimensions of professional agency in schools facing societal change. Contribution 3 conceptualises digital school transformation as interface work across interconnected networks and investigates how actors mobilise social, digital, and material resources for school development. Contribution 4 focuses on teacher education by identifying with whom student teachers perceive learning opportunities for student-centred collaboration. The discussion will focus on theoretical and methodological implications of the studies, and will provide directions for future research.

A Longitudinal Social Network Perspective on Leadership in Evidence-Informed Practices

Presenting Author:Christa Krijgsman, Eindhoven University of Technology, Netherlands; **Co-Author:**Jasperina Brouwer, University of Groningen, Netherlands; **Co-Author:**Janneke Sleenhof, Eindhoven School of Education, Netherlands; **Co-Author:**Femke Geijssels, Tilburg University, Netherlands; **Co-Author:**Marieke Thurlings, Eindhoven University of Technology, Netherlands; **Co-Author:**Gonny Schellings, Eindhoven University of Technology, Netherlands

Approached from social capital theory, this study aims to investigate (1) how social networks consisting of school and teacher leaders evolve over the course of one year, regarding discussing and collaborating on evidence-informed practices, and (2) to which extent perceptions of evidence-informed practices and the school as a learning organization are associated with network activity. School and teacher leaders from three secondary schools completed two questionnaires at four time points (T1-T4), with half-year intervals. At T2 ($n=142$) and T4 ($n=143$), they answered two nomination questions: one concerning the discussion network and the other concerning the collaboration network. At T1 ($n=93$) and T3 ($n=84$), they reported their individual perceptions of evidence-informed practices and of the school as a learning organization. We analyzed data using SPSS and Gephi. At School 1 (see Figure 1), the size of the activity in the networks for discussing ($p=.018$) and collaborating on ($p=.028$) evidence-informed practices increased over the course of the school year, whereas these networks remained largely stable at Schools 2 and 3. The more school and teacher leaders at School 1 perceived that they individually worked evidence-informed at T1 and T3, the more active they were in the network for discussing evidence-informed practices at T2 and T4 (range $r=.42$ and $r=.68$, p

Social capital, professional agency and ties to colleagues at school context

Presenting Author:Tuire Palonen, University of Turku, Finland; **Co-Author:**Shupin Li, University of Jyväskylä, Finland; **Co-Author:**Päivi Hökkä, Tampere

University, Finland

Our study focuses on school staff members' social resources (capital), their exchange along social ties and professional agency in the school context. The data for the study were collected in four schools in Finland and Sweden. We utilize two surveys, one for Social Network Analysis (SNA) and the other for professional agency. The participants (N=262) were teachers, principals and other professionals. The five variables regarding social ties were later grouped into instrumental (information seeking, collaboration, migrate student support) and expressive (emotional support and inspiration giving) network dimensions. For agency, a 9-item Professional Agency Measure (PAM) was employed (Vähäsantanen et al., 2022). SNA analysis revealed a rather similar distribution in all four school communities, emphasis being expectedly mostly in instrumental ties. QAP correlation between instrumental and expressive ties was observed. Positive correlation were found between social ties and the Influencing and Participation PAM dimensions, whereas Identity turned to be immune to almost all other variables and thus hard to explain. Hours spent at school correlated with all PAM measures and social ties. Somewhat unexpectedly our results indicate that seniority (years spent in the field of education) has hardly any relation to PAM, whereas it explained more variance in social tie centrality values. The main contribution of this presentation is to show how agency is related to teachers' social relationships with their colleagues in a context where societal change, such as increased migration, is ongoing, representing different kinds of approaches to social capital.

Professionalisation through Interface Work: Networking in Digital School Transformation

Presenting Author:Burri Eliane, Zurich University of Teacher Education, Switzerland

Digital transformation in schools is often reductively framed as a primarily technical challenge. In contrast, this contribution conceptualizes digital transformation as a multidimensional and socially embedded process requiring organizational development and professionalisation. From a theoretical perspective, technological innovation in educational organisations is understood as social interactions and coordination unfolding at the interfaces between interconnected networks. This interface work consists of ongoing processes of coordination and negotiation through which actors collectively shape digital transformation by mobilizing specific resources. Resources are defined here as social, digital, and material factors: specifically collaborative networks, professional expertise and technical infrastructure. Focusing on diverse stakeholders such as school leaders, educational ICT supporters, teachers, and authorities, the study explores how these actors interact and mobilise resources across organisational boundaries. Methodologically, the exploratory study is based on 34 semi-structured interviews conducted at four Swiss lower secondary schools in German-speaking Switzerland. Qualitative Network Analysis combined with egocentric network maps is used to visualise relationship structures and resource flows, further analysed through Qualitative Structural Analysis. Preliminary findings indicate that successful digital transformation in schools depends less on the introduction of new technologies than on the capacity to identify, mobilise, and collectively stabilise existing network resources including time for collaboration, dedicated roles, access to professional learning opportunities and relevant information. The quality of interface work emerges as a decisive factor for the sustainable embedding of digital developments within the school, highlighting professionalisation as a fundamentally relational and network-based achievement.

Learning opportunities for student-centred collaboration in the social network of teacher education

Presenting Author:Marco Galle, Lucerne University of Teacher Education, Switzerland

Collaboration is crucial for teachers' professional activities and has proven positive effects on pupils' learning when it is explicitly directed at supporting their learning processes, referred to as student-centred collaboration. Yet, student teachers feel insufficiently prepared for collaborative tasks and curricula in Switzerland rarely address student-centred collaboration. Little is known about where student teachers learn to collaborate in a student-centred way. The SNSF-funded project examines which actors student teachers learn from, what they learn, and how relevant they perceive these experiences. Data from 251 student teachers were collected through personal network maps and follow-up discussion or chatbot-based interview and analysed using qualitative content analysis. Preliminary findings show that school-based actors are central to learning collaborative activities. Remarkably, teachers without a formal assignment in teacher education appear as frequently as university-based mentors and more often than university lecturers, raising questions about the quality and distribution of learning opportunities.

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M5

Symposium

Lifelong Learning

Vulnerability in lifelong learning – A bounded agency perspective

Keywords: Adult education, Inclusion, Life-long learning, Mixed-method research, Qualitative methods, Quantitative methods, Workplace learning

Interest group: SIG 14 - Learning and Professional Development

Chairperson: David Gijbels, University of Antwerp, Belgium

Organiser: Bea Mertens, University of Antwerp, Belgium

Discussant: Ellen Boeren, University of Glasgow, UK, United Kingdom

Lifelong learning is widely recognised as essential for employability, social inclusion and active citizenship, yet participation remains structurally unequal. These persistent gaps point to how vulnerability in lifelong learning emerges through the interplay of structural conditions and individual agency. Although adults' lifelong learning agency plays an important role, it is profoundly shaped by social background, prior educational experiences, and the opportunities available in educational and workplace settings, resulting in what can be understood as *bounded agency* (Boeren, 2011; Rubenson & Desjardins, 2009). Drawing on Flemish and Finnish PIAAC survey data, the first two contributions to this symposium define vulnerability in terms of socio-economic status and educational attainment, examining how these factors continue to structure unequal participation in lifelong learning. The final two presentations shift the focus to the role of adult education. A Dutch mixed-methods study adopts a multidimensional view of vulnerability in work-related learning and explores how adult education can better reach and support vulnerable adults. The fourth contribution investigates educational-psychological dimensions of vulnerability in lifelong learning agency and analyses how programme structures can either foster or constrain the development of agency. Together, these contributions offer a coherent and timely perspective on the interplay between structural and individual factors, and the opportunities this creates for more inclusive lifelong learning. Boeren, E. (2011). *Participation in adult education: a bounded agency approach*. Rubenson, K., & Desjardins, R. (2009). The Impact of Welfare State Regimes on Barriers to Participation in Adult Education: A Bounded Agency Model. *Adult Education Quarterly*, 59(3), 187-207. <https://doi.org/10.1177/0741713609331548>

Participation in non-formal learning: Lingering effect of parental education in Flemish PIAAC data

Presenting Author:Astrid Parmentier, University Ghent, Belgium; **Co-Author:**Jan De Neve, University Ghent, Belgium; **Co-Author:**Fien De Smedt, Ghent University, Belgium; **Co-Author:**Hilde Van Keer, Ghent University, Belgium; **Co-Author:**Bram De Wever, Ghent University, Belgium

Participation in lifelong learning, and particularly in non-formal education, is unequally distributed across adult populations. Lower-educated adults are known to participate substantially less than their higher-educated peers (Boeren, 2009; Desjardins et al., 2006; Desjardins, 2015), yet educational attainment itself is strongly shaped by social origin (e.g., Blau & Duncan, 1967; Kraaykamp et al., 2013). This study investigates whether parental educational attainment continues to influence adults' participation in non-formal learning beyond the effect of individuals' own education level. Using data from the second cycle (2023) of the Programme for the International Assessment of Adult Competencies (PIAAC) for Flanders, we examine descriptive patterns and logistic regression models predicting participation in non-formal education during the previous year. Results confirm large participation gaps defined by adults' own educational level, but also reveal persistent differences by parental education. Even among adults with the same level of educational attainment, the ones with lower educated parents participate significantly less in non-formal learning than those with higher-educated parents. Logistic regression analyses show that parental education remains a significant predictor of non-formal education participation after controlling for adults' own education, indicating a lasting influence of social background on adult learning participation. These findings indicate that inequalities in lifelong learning extend beyond individual characteristics, underscoring the need for adult education policies and providers to explicitly address socially stratified barriers to participation.

Learner profiles of Finnish adults with limited information-processing skills

Presenting Author:Joonas Mannonen, Finnish Institute for Educational Research, University of Jyväskylä, Finland; **Co-Author:**Kari Nissinen, University of Jyväskylä, Finland; **Co-Author:**Pauliina Rikala, University of Jyväskylä, Finland; **Co-Author:**Pessi Lyyra, University of Jyväskylä, Finland; **Co-Author:**Antti Vuoriainen, University of Jyväskylä, Finland; **Co-Author:**Raija Hämäläinen, University of Jyväskylä, Finland

Adults with limited information-processing skills are among the most vulnerable when navigating the demands of a rapidly changing society and labor market. Although they are the group most in need of lifelong learning opportunities, they participate in various forms of learning less than others. However, this population is far from homogeneous; many do engage in learning in different ways. Using nationally representative data from the second cycle of the Survey of Adult Skills (PIAAC CY2), this study examined patterns of engagement in formal, non-formal and informal learning among Finnish adults with limited information-processing skills. The sample included adults scoring at proficiency level 2 or below in each of the three skill domains assessed in the survey: literacy,

numeracy, and adaptive problem solving. Drawing on their participation in formal, non-formal, and informal learning, we conducted a cluster analysis to identify distinct learner profiles within this group. Indicators of engagement in learning included educational attainment, participation in non-formal adult education and training, parental education, learning at work and skill use at and outside work. Our results highlight the diversity within the population of adults with limited information-processing skills and show how different background characteristics relate to distinct patterns—or the absence—of engagement in learning. The study contributes new insights into how adults with limited information-processing skills in Finland participate in learning and offers valuable evidence for policymakers seeking to design national lifelong learning strategies that effectively reach diverse subgroups.

Multiple perspectives on enhancing participation in vulnerable adults' work-related learning

Presenting Author: Simon Beausaert, Maastricht University, Netherlands; **Co-Author:** Fatemeh Janesarvatan, Maastricht University, Netherlands; **Co-Author:** Niels van der Baan, Maastricht University, Netherlands; **Co-Author:** Wendy Nuis, Maastricht University, Netherlands; **Co-Author:** Marijn Wijga, Maastricht University, Netherlands; **Co-Author:** Eva Kyndt, Deakin University, Australia

This contribution presents findings from two interrelated studies that are part of a larger mixed-method research project on participation in work-related learning across the life course. Previous research has consistently shown that participation in work-related learning is socially stratified and strongly associated with individual characteristics (e.g. age, motivation) and contextual factors such as job design. Focusing on vulnerable adult learners, the present studies aim to deepen understanding of why certain groups participate less in work-related learning and how adult education institutions can better attract and retain these learners. The first study adopts a sequential mixed-method design combining survey data from Dutch employees ($N = 1,008$) with in-depth interviews among learners identified as having the lowest levels of learning participation. Results indicate that vulnerability in work-related learning emerges from the accumulation and interaction of individual and contextual barriers, including lower educational attainment, older age, low learning motivation and self-efficacy, limited career orientation, low work autonomy, high work pressure, and challenges related to technological change. The second study examines the perspective of adult education providers through qualitative interviews with trainers and programme coordinators. Using deductive and inductive coding followed by thematic analysis, the findings highlight the importance of flexible, personalised and supportive educational practices, such as modular programmes, intensive coaching, reduced administrative and financial barriers, and strong collaboration with employers. Together, the studies underline that enhancing participation in work-related learning requires coordinated interventions at the level of learners, organisations and educational institutions, with a strong emphasis on accessibility, support and perceived relevance.

From diploma pursuit to lifelong learning agency: low educated adults in second chance education

Presenting Author: Bea Mertens, University of Antwerp, Belgium; **Co-Author:** Katelijne Barbier, University of Antwerp, Belgium; **Co-Author:** Katrien Cuyvers, University of Antwerp, Belgium; **Co-Author:** Sven De Maeyer, Antwerp University, Belgium; **Co-Author:** Vincent Donche, University of Antwerp, Belgium

Adult learners in second-chance education (SCE) constitute an insufficiently explored group within lifelong learning research. SCE programmes offer adults with limited prior schooling a route to an upper secondary education credential and, by targeting low-educated learners, are uniquely positioned to foster future engagement in lifelong learning. This study investigates how prepared these learners are to assume agency in lifelong learning beyond the programme, and how this agency is formed by the learning conditions within SCE. The analysis draws on two qualitative studies embedded in a larger mixed methods project. A latent profile analysis ($N=512$) informed the purposive selection of interview participants ($N=19$), ensuring variation in motivational and learning-related dispositions. Interview data were examined through an abductive lens, using well-validated theoretical frameworks in the field of educational psychology. The results indicate that while obtaining a diploma is an important objective, it is often pursued through externally regulated motives and short-term, efficiency-oriented learning. Learners showed limited awareness of effective learning approaches and relied heavily on teacher direction, yet frequently interpreted their progress positively due to relatively low academic demands. Overall, the study reveals that although SCE expands access to formal qualifications, low-challenging and externally regulating environments may impede the development of robust lifelong learning agency. Supporting this agency requires pedagogical and policy measures that encourage deeper motivation and stronger self-regulated learning.

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M3

Symposium

Unlocking Learning Potential in Simulations to Enhance Professional Training

Keywords: Adaptive learning, Cooperative/collaborative learning, Engagement, Eye tracking, Immersive technologies for learning, Simulation-based learning, Virtual reality, Vocational education and apprenticeship training, Work-based learning

Interest group: SIG 14 - Learning and Professional Development

Chairperson: Helen Jossberger, University of Regensburg, Germany

Organiser: Helen Jossberger, University of Regensburg, Germany

Discussant: Monika Nerland, University of Oslo, Norway

To prepare learners for a future profession, simulations are considered powerful learning environments. Simulations offer learners the opportunity to interact and engage in complex, real-world tasks in a safe and controlled setting. However, due to technological and cost-related constraints, a widespread implementation is often not possible. Fostering collaborative activity as a scaffold for learning can be a means to use the scarce resources wisely and facilitate performance in these complex settings. Moreover, engaging in (inter)professional collaboration is an important activity at various workplaces. This symposium aims to increase understanding about underlying cognitive and motivational processes as well as adaptive instructional elements that shape learning by bringing together four empirical studies. The first contribution presents a study in which engagement, cognitive load, and experienced distractions of learners with active and bystander roles in a forklift simulation are explored qualitatively and quantitatively. The second contribution in vocational education investigates whether the observer or performer role matters for learning outcomes in an asymmetric immersive virtual reality task and how learners experience both roles regarding presence, immersion, emotions, and cognitive load. The third contribution examines the effects of virtual reality medical training. The instructional design combines step-by-step scaffolding of the wound care procedure with collaboration scripts that guide interprofessional discussion at predefined clinical decision points. The fourth contribution explores how adaptive simulation features shape learning by looking at scaffolds, stressors, and performance in police de-escalation training. This symposium aims to stimulate discussion and reflection on how learning works in simulations.

Learning Through Observing Immersive Virtual-Reality Training: Engagement and Learning Processes

Presenting Author: Gilles Obourdin, University of Antwerp, Belgium; **Co-Author:** Senne Van Hoecke, Open Universiteit, Netherlands; **Co-Author:** Piet Van den Bossche, University of Antwerp, Belgium; **Co-Author:** Tine van Daal, University of Antwerp, Belgium

Immersive Virtual Reality (IVR) offers engaging learning experiences, but practical constraints often require group-based use. In such settings, only one learner uses the IVR headset while others observe. These observers, or bystanders, may benefit from vicarious learning, yet little is known about how this experience influences engagement, learning processes, and later active IVR performance. This study investigates how vicarious IVR affects bystander engagement and learning, how the bystander role influences subsequent IVR performance, and how real-time processes of bystander learning can be captured using experience sampling and eye tracking. An observational study was conducted with 36 participants using a forklift simulator. Participants rotated through the roles of IVR user and bystander across two equivalent tasks. Measures included pre- and post-tests, repeated experience sampling of cognitive and affective variables, and eye tracking to record visual attention during observation. Preliminary findings show that self-efficacy significantly increased with more vicarious experience ($p < .001$, $\eta^2 = .12$). Engagement also increased, though not significantly ($p = .10$, $\eta^2 = .04$). Observational engagement predicted a higher sense of presence during later IVR use ($\beta = .34$, $p = .04$). Participants with prior observational experience reported slightly lower cognitive load during their own IVR session, although this effect was not statistically significant. Eye tracking analyses are ongoing and will examine visual focus patterns in relation to engagement and performance. This study contributes to IVR instructional design by identifying the potential of the bystander role to enhance engagement and reduce cognitive demands in group-based VR learning.

What's in it for the Observer? Combining IVR and Collaborative Learning in Vocational Education

Presenting Author: Herbert Thomann, University Goettingen, Germany; **Co-Author:** Lea Sennhenn, University of Göttingen, Germany; **Co-Author:** Viola Deutscher, Universität Göttingen, Germany

Immersive Virtual Reality (IVR) offers authentic and interactive environments for vocational learning, yet widespread implementation is hindered by technological and cost-related constraints. While most IVR research focuses on individual immersion experiences, far less is known about asymmetric, co-located learning settings in which only one learner (Performer) is immersed in VR while another (Observer) sits in the same physical space, follows the task via a live-streamed VR view, and engages in real-time verbal interaction with the immersed partner. Although Experiential Learning Theory and Social Cognitive Theory suggest that both active engagement and vicarious observation can facilitate learning, empirical evidence in co-located asymmetric IVR contexts remains scarce. This study investigates (1) whether Observers achieve learning outcomes comparable to Performers in an asymmetric IVR task, (2) role-related experiences (e.g.,

presence, emotions, cognitive load, interaction), and (3) whether role order across two weeks influences learning outcomes. Using a crossover design, 44 vocational students alternated over two weeks between performing tasks in IVR and observing the live stream. Each week included a pre-test, post-test, and questionnaire. Learning outcomes were analysed with mixed-model ANCOVAs controlling for prior knowledge. Both roles showed significant learning gains, with no significant performance differences between Performers and Observers. Descriptive analyses indicated a carry-over effect, suggesting that initial immersive engagement supports subsequent observational learning. Learners reported strong engagement and social presence across roles. The study demonstrates that asymmetric IVR can support both experiential and vicarious learning processes and highlights a scalable, pedagogically meaningful model for integrating IVR into vocational education.

Procedural Knowledge and Willingness to Collaborate in Scaffolded Interprofessional IVR-Training

Presenting Author: Constanze Richters, LMU University Hospital, Institute of Medical Education, Germany; **Co-Author:** Matthias Witt, LMU University Hospital, Institute of Medical Education, Germany; **Co-Author:** Melanie Bauer, LMU University Hospital, Institute of Medical Education, Germany; **Co-Author:** Anna Weiss, LMU University Hospital, Institute of Medical Education, Germany; **Co-Author:** Matthias Stadler, LMU University Hospital, Institute of Medical Education, Germany; **Co-Author:** Martin Fischer, LMU University Hospital, Institute of Medical Education, Germany

Complex healthcare situations such as chronic wound care require interprofessional collaboration between medical, nursing, and pharmacy professionals, yet structured interprofessional training remains scarce in higher education. Immersive virtual reality (IVR) provides an immersive, standardised environment for joint training across professions, but its effectiveness depends on instructional design that structures complex tasks and supports schema construction. This study examines the effects of IVR training for interprofessional wound care on procedural knowledge and willingness to collaborate, while considering intrinsic (ICL) and extraneous cognitive load (ECL). The instructional design combines step-by-step scaffolding of the wound care procedure with collaboration scripts that guide interprofessional discussion at predefined clinical decision points. In a within-subjects design, 116 students from medicine, nursing, and pharmacy completed two IVR training sessions in interprofessional triads. Procedural knowledge increased significantly after the first session, independent of profession and unrelated to ECL and ICL. Willingness to collaborate did not change initially but increased after the second session. Overall, even short IVR training sessions improved procedural knowledge, likely due to learners' low prior knowledge at the outset, supporting early integration of interprofessional IVR training. Changes in willingness to collaborate emerged only across repeated team interactions, indicating a slower development of attitudinal outcomes. The independence of knowledge gains from ECL points to a well-structured VR design. Future research should examine collaborative processes more directly using process-based measures.

Adaptive simulation features: Scaffolds, stressors, and performance in police de-escalation training

Presenting Author: Marcella Hoozeboom, University of Twente, Netherlands; **Co-Author:** Ilona Frisco-van den Bos, University of Twente, Netherlands; **Co-Author:** Bianka Rychert, University of Twente, Netherlands

Scenario-based training (SBT) is widely used to prepare professionals for complex, high-stakes situations. Yet, little is known about how adaptive instructional elements shape learning processes in real time. Building on research targeting cognitive load, adaptivity, and representational scaffolding in simulations, this study examined how explicit stressors and representational scaffolds influence learning and communication and coordination quality. Scaffolds were embedded in a three-stage police de-escalation scenario design of a household violence scenario, with increased complexity across the scenarios (low, medium, and high stress scenarios). Using video data from police SBT, designed in collaboration with the instructors (n = 11 teams of 2 police officers; 33 scenario instances), we conducted an observational analysis employing a deductive-inductive coding scheme developed based upon Bauer et al.'s (2022) and Wollert and Quail's (2018) representational scaffold and stressors frameworks. Eight explicit stressors (e.g., threat, time pressure) were coded at the event level, while seven representational scaffold dimensions (e.g., typicality) were coded at the scenario level. Performance was operationalised through (a) speed of de-escalation and (b) real-time behavioural indicators of communication, coordination, movement, and physical intervention. Preliminary analyses indicate that the stepwise increase in scenario complexity enabled examination of how accumulating stressors and embedded representational scaffolds influenced performance under realistic training conditions. Temporal analyses showed that stressors like threat, ambiguity, and stacked stressors were related to reduced communication and coordination quality, consistent with stress-performance theory. Furthermore, representational scaffolds appeared to influence performance, suggesting that integrating these into simulation design may enhance transferable skills across scenarios.

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M4

Single Paper

Higher Education, Learning and Instructional Technology, Teaching and Teacher Education

Learning Resources and Conditions for Workplace Learning

Keywords: Augmented reality, Cooperative/collaborative learning, Design-based research, Informal learning, Leadership, Longitudinal studies, Mentoring and coaching, Simulation-based learning, Teacher/trainer professional development, Teamwork, Technology-enhanced learning, Virtual reality, Vocational education and apprenticeship training, Workplace learning

Interest group: SIG 14 - Learning and Professional Development

Chairperson: Idwer Doosje, Universiteit Utrecht / Hogeschool Utrecht, Netherlands

Enacting Dialogic Inquiry with Virtual Labs: Teacher Learning in Practitioner-Led PD

Keywords: Cooperative/collaborative learning, Design-based research, Teacher/trainer professional development, Technology-enhanced learning

Presenting Author: Luwei Bai, University of Cambridge, United Kingdom

In the digital era, teacher professional development (TPD) requires more than the acquisition of technological skills; it involves supporting pedagogical transformation and teacher change across classroom practices, beliefs, and student learning. This study investigates how dialogic inquiry supported by virtual laboratories (VLs) mediates teacher learning and change within a practitioner-led TPD programme in Brazilian public upper-secondary physics education. Drawing on a design-based research approach, the programme engaged six teachers in three iterative cycles that combined dialogic inquiry, VL-supported classroom experimentation, and structured reflection. Data included video-recorded classroom lessons, interviews with teachers and students, and reflective discussions. Classroom discourse was coded using an adapted Tech-SEDA framework and analysed through lag-1 transition networks to examine changes in the sequential organization of dialogic moves over time, complemented by thematic analysis of interview data. The findings show that teacher change did not follow a linear uptake of predefined pedagogical concepts. Instead, teachers' understanding of dialogic inquiry developed through enactment. Initially, VLs were used in teacher-centred ways, but increased student engagement prompted shifts toward more dialogic and inquiry-oriented practices. Over successive cycles, interaction patterns became more distributed, dialogic practices more diverse, and procedural language less prominent, supported by reflective self-coding and collective sense-making. The study highlights teacher learning as an emergent, non-linear process in which practices, epistemic beliefs, and pedagogical awareness co-evolve. It contributes to research on dialogic pedagogy and TPD by demonstrating how practitioner-led, reflective designs can support meaningful integration of digital tools into inquiry-oriented teaching.

Students' cooperative problem-solving in a business management simulation game

Keywords: Cooperative/collaborative learning, Longitudinal studies, Simulation-based learning, Teamwork

Presenting Author: Robin Busse, Technical University of Darmstadt, Germany

Business simulation games are widely used in higher education to foster experiential learning and are commonly associated with cooperative learning and problem-solving. However, cooperative processes in simulations may also be challenged by negative socio-emotional dynamics and group regulation. This study investigates the development of students' perceived cooperative problem-solving in a business simulation game. The computer-based simulation TOPSIM was implemented in a bachelor-level business administration program at a German university. A total of 278 students in 61 groups were surveyed weekly over six weeks, resulting in 1,668 observations. Multilevel regression analyses reveal substantial intraindividual variation in perceived cooperative problem-solving. Results show higher cooperative problem-solving in weeks characterized by lower negative socio-emotional behavior, weaker informal leadership, and stronger individual task participation. Interindividual findings indicate complex associations between socio-emotional climate and cooperative problem-solving. Overall, the study highlights the dynamic and process-oriented nature of cooperative problem-solving in business simulation games.

Leading Learning in Tech: Managers' Reasoning About Employees' Learning Under High Mobility

Keywords: Informal learning, Leadership, Mentoring and coaching, Workplace learning

Presenting Author: Omri Hadar, The Hebrew University of Jerusalem, Israel; **Co-Author:** Yifat Kolikant, Hebrew University of Jerusalem, Israel

The tech industry is characterized by rapid change and high complexity, requiring employees to engage in continuous learning to remain professionally relevant. Prior research depicts learning in this industry as largely self-directed and embedded in day-to-day work, while also identifying managers as a meaningful source of support. However, a defining feature of tech work remains underexplored in research on managerial support for learning: frequent job transitions, with

employees often moving between organizations after only a few years. In this study, we examined how managers reason about supporting employee learning when they anticipate short tenure, yet still require employees to develop high levels of expertise. We conducted semi-structured interviews with 28 middle-level managers in the Israeli tech industry and analyzed the data thematically. Managers' accounts aligned with prior research on tech employees' workplace learning, emphasizing work-embedded and self-directed learning. Building on this baseline, managers described how industry-level conditions beyond the organization shaped their reasoning regarding learning support, with anticipated mobility emerging as an explicit consideration. Given the dynamics of the tech industry, employees were seen as highly motivated to learn to position themselves for future roles. As a result, learning opportunities were described as a sought-after commodity. Managers framed providing such opportunities as supporting organizational competitiveness in recruiting high-potential employees, sustaining motivation, and extending tenure, even when "retention" was understood as a matter of a few years. Overall, this study underscores the importance of attending to the industry-level context when examining learning-oriented leadership in the tech industry.

Sketch-to-Pipes. A longitudinal field experiment comparing AR and VR for spatial ability development

Keywords: Augmented reality, Longitudinal studies, Virtual reality, Vocational education and apprenticeship training

Presenting Author:Alberto A.P. Cattaneo, Swiss Federal University for Vocational Education and Training, Switzerland; **Co-Author:**Vito Candido, SFUVET, Switzerland

This contribution presents a longitudinal field experiment aimed at investigating (1) whether using augmented reality (AR) or virtual reality (VR) is effective in supporting vocational education apprentices to develop spatial ability – here considered mainly as mental rotation skills – and technical drawing skills; and (2) whether such effectiveness differs between the two technological solutions, both used with a head-mounted display. 28 sanitary installer apprentices participated in the study, equally divided between the two conditions (AR vs VR). For four consecutive sessions they used an immersive application at their vocational school. The application displayed technical drawings of sanitary pipes. The task was to manipulate virtual pipes to transpose the 2D drawing into a 3D virtual construction. Each session lasted one hour and included three exercises. Pre- and post-measures of mental rotation skills and technical drawing were also collected, besides the scores they obtained in the task-specific exercises. A linear model approach showed that both mental rotation and technical drawing skills significantly improved over time and that the exercises played an important role on technical drawing development. AR was better for technical drawing, but the interaction effect with time was only marginally significant. Despite the limited sample size, this study provides insights into the use of immersive technology in initial vocational education.

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M3

Single Paper

Learning and Social Interaction, Lifelong Learning

Learning and Professional Development in Healthcare Education

Keywords: Adult education, Career development, Digital literacy, Ethnographic methods, Informal learning, Instructional strategies, Motivation, Quantitative methods, Simulation-based learning, Social interaction, Transfer of learning, Vocational education and apprenticeship training, Work-based learning, Workplace learning

Interest group: SIG 14 - Learning and Professional Development

Chairperson: Christian Michaelis, University of Leipzig, Germany

Career-choice motivations of student nurses: Insights from a two-measurement point interview study

Keywords: Career development, Motivation, Vocational education and apprenticeship training, Work-based learning

Presenting Author:Roman Höhl, University of Kassel, Germany; **Presenting Author:**Michael Goller, University of Kassel, Germany; **Co-Author:**Alena Lehnert, University of Kassel, Germany

In the context of an ongoing shortage of nurses, partly due to recruitment issues, it is important to understand why young people choose to pursue a career in nursing. To generate such insights, this study investigates the career-choice motivations of student nurses in Germany using a two-measurement-point interview study design. Interviews were conducted before (n1=19) and after (n2=15) a significant change in the way nurses are trained within Germany's VET system (introduction of the so called 'generalistic scheme' that now combines three former separate training programmes). The study was guided by two research questions: (a) What factors motivate young people in Germany to pursue a career in nursing? and (b) How did the introduction of generalist training affect the career choices of student nurses? The data was analysed using qualitative content analysis and thematic analysis. Various topics emerged from the interviews, including an emphasis on career opportunities, a negative overall assessment of the job profile, and the influence of the social environment. Reasons for choosing nursing included prior experience in the field, a desire to help and care for others, social persuasion, meaningful work, a variety of tasks, contact with other people, an interest in health topics, and job security or career options. The generalist approach was perceived as rather positive, as it increases occupational options. This presentation aims to report the findings of the study, derive implications for practice, and develop a research programme focusing on how career-choice motivations affect professional learning and development over time.

Practical nurse students' learning and mental models of infection prevention and control

Keywords: Adult education, Transfer of learning, Vocational education and apprenticeship training, Work-based learning

Presenting Author:Els Boshuizen, Open University of the Netherlands, Netherlands; **Co-Author:**Riikka Eronen, University of Turku, Department of Teacher Education, Finland; **Co-Author:**Laura Helle, University of Turku, Finland; **Co-Author:**Tuire Palonen, Turku University, Finland, Finland

In healthcare education, learning should result in transferring knowledge and skills that facilitate participation in real-world clinical practice. Applying knowledge requires contextual understanding and the ability to make clinical judgments. Connecting the learning environment to learners' prior experiences and everyday contexts supports the acquisition of transferable knowledge. The transfer of learning into practice requires both pedagogical planning and support from the work environment. While routines can facilitate this process, they cannot substitute for deep understanding or critical reflection. We aimed to study how transfer of infection prevention and control competence (IPC) is shown when practical nurse students are asked to perform a demanding but routine care procedure. We analyzed what types of errors practical nurse students make according to different mental models, i.e., Household Hygiene Model, Mixed Model, and Transmission Model. Twenty adult practical nurse students participated in the semi-structured interviews conducted after both the theoretical instruction and the students' six-week clinical placement period. Interviewees were asked to draw and verbally explain how they would perform a given nursing procedure while being video recorded, with the camera focused on the interviewee's hands and the table. The results indicate that only two of the 20 students were able to produce a correct workflow and were categorized under the scientific Transmission Model, as their descriptions were error-free. Five participants were classified under Household Hygiene Model cases; they completely missed the IPC point. The majority of participants fell into the Mixed Model category demonstrating partial adherence to correct practices.

Managing the mannequin: Recipient design and instructional work in nursing simulation

Keywords: Ethnographic methods, Instructional strategies, Simulation-based learning, Social interaction

Presenting Author:Charlott Sellberg, University of Gothenburg, Sweden; **Co-Author:**Oskar Lindwall, University of Gothenburg, Sweden

Simulation-based training in nursing education depends on students' interaction with simulated patients, often enacted through high-fidelity mannequins with limited communicative capacities. Drawing on ethnomethodology and multimodal conversation analysis, this presentation examines how facilitators, through animating the mannequin's voice, participate in the ongoing organization of action in moments of clinical uncertainty. The empirical case involves scenarios in which students interact with a high-fidelity mannequin, an advanced patient simulator designed to reproduce certain physiological responses but limited in its expressive and communicative capacities, representing conscious patients whose condition is deteriorating. Particular attention is given to how the operator produces recipient-designed vocal actions that escalate the patient's symptoms when students respond minimally or with delays, thereby reorganizing the situational gestalt of the encounter. Through these vocal actions, clinically relevant features of the situation are made accountable and actionable for the students within the unfolding gestalt contexture of simulated care. The findings show how operators actively work to give voice to the mannequin and to re-establish interactional coordination through vocal actions, supporting students' participation in patient-centred care and teamwork. By foregrounding the instructional work involved in managing the mannequin's limited expressive capacities, the study contributes to research on professional learning in simulation by elucidating how technical elements and pedagogical work are intertwined in the praxeological accomplishment of meaningful learning activities in nursing education.

Digital Competence in Nursing: A Cross-National Study Across Care Settings

Keywords: Digital literacy, Informal learning, Quantitative methods, Workplace learning

Presenting Author:Veronika Anselmann, University of Education Schwäbisch Gmünd, Germany; **Co-Author:**Pia Schlüter, University of Education Schwäbisch

Gmünd, Germany

Digital competence has become a central component of everyday nursing work, as documentation systems, digital equipment, and technology-mediated patient interactions increasingly shape care practices. Building on the competence framework proposed by Becka et al. (2020), this study examines nurses' self-assessed digital competencies and explores whether differences are associated with care setting and national context. A cross-sectional survey was conducted among 284 professionally active nurses working in Germany and Switzerland. Data were collected using a validated questionnaire that explicitly refers to digital technologies and practices used in respondents' work contexts. Descriptive statistics and one-way analyses of variance were applied. Results indicate differentiated competence profiles. Core digital competencies were rated at a moderate level, while specialised competencies related to digital equipment showed slightly higher values. Documentation-related competencies received the lowest ratings. Significant differences between Germany and Switzerland were found for core digital competencies and specialised competencies related to equipment use, with higher self-assessments among nurses working in Germany. In addition, reflective competencies related to technology use in patient interaction differed significantly across care settings. Nurses working in emergency departments reported higher reflective competence levels than those working in psychiatric settings. Although based on self-assessment, the findings provide insight into how digital competence is experienced in everyday nursing work. The results highlight that digital competence is shaped by organisational and national contexts and underline the importance of context-sensitive, work-based learning approaches in vocational nursing education.

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M2

Single Paper

Lifelong Learning

Organisational Learning, Change and Reflective Practice

Keywords: Adaptive learning, Attitudes and beliefs, Career development, Informal learning, Leadership, Life-long learning, Reflection, Review study, Workplace learning

Interest group: SIG 14 - Learning and Professional Development

Chairperson: Jana Hübner, Vrije Universiteit Amsterdam, Netherlands

Conceptualizing Learning Leadership: A Conceptual Review of Leadership for Learning

Keywords: Leadership, Life-long learning, Review study, Workplace learning

Presenting Author: Vivian Zondag, Maastricht University School of Business and Economics, Netherlands; **Co-Author:** Simon Beausaert, Maastricht University, Netherlands; **Co-Author:** Therese Grohnert, Maastricht University, Netherlands; **Co-Author:** Wendy Nuis, Maastricht University, Netherlands

Leaders are widely recognized as central actors in fostering learning in organizations, yet research on leadership for learning remains conceptually fragmented across leadership and workplace learning literatures. Existing research consistently shows that leadership is related to psychological safety, feedback seeking, reflection, and knowledge sharing, but the specific leader behaviors through which learning is enabled remain insufficiently integrated and poorly conceptualized. In response, the notion of learning leadership has begun to emerge, especially in workplace learning literature, yet it is often invoked without being defined as a coherent behavioral construct. Building on the need for conceptual clarity, this paper presents a theory synthesis conceptual review aimed at developing a conceptualization of learning leadership. Following established methodological standards for conceptual review, a systematically conducted literature search is currently underway, integrating insights from the management literature on leadership and workplace learning literature. Using theory synthesis, transformational, ethical, authentic, servant, empowering, learning-oriented leadership, and leader-member exchange are systematically analyzed to extract and integrate learning-relevant leader behaviors. Preliminary synthesis reveals substantial overlap across these approaches, including developmental support, role modeling, fostering psychological safety, encouraging reflection, and creating learning opportunities. The study will result in an integrative conceptual framework that specifies the core behavioral components of learning leadership. This framework aims to enhance conceptual clarity, guide future empirical research, and provide a foundation for subsequent measurement development. By translating fragmented leadership theories into learning-relevant behaviors, it also offers organizations and leadership developers clearer guidance on how leaders can actively foster learning in everyday work.

Change Readiness and Learning in Organizational Change: A Systematic Review

Keywords: Adaptive learning, Attitudes and beliefs, Review study, Workplace learning

Presenting Author: Sara Perea, Maastricht University, Netherlands; **Co-Author:** Therese Grohnert, Maastricht University, Netherlands; **Co-Author:** Irina Nikolova, Maastricht University, Netherlands

Despite the centrality of change readiness (CR) and learning in the context of organizational change, there is little clarity regarding how these two concepts interact and jointly shape change processes. Consequently, it remains unclear how CR and learning interact, limiting the development of theory and evidence-based practices that can effectively support learning and readiness for effective change. This systematic literature review provides a structured synthesis of how learning and CR have been conceptualized, operationalized, and linked across 31 prior studies. The findings reveal substantial conceptual fragmentation in how learning is examined in relation to CR, as well as a notable lack of group-level and longitudinal approaches. These limitations hinder the development of a comprehensive framework capable of explaining how learning and CR dynamically interact within organizations for effective change. By making these methodological blind spots explicit, the review opens new avenues for future research designs better suited to capturing the dynamic nature of change processes.

Organizational learning interventions and what makes them tick: a systematic review

Keywords: Career development, Life-long learning, Review study, Workplace learning

Presenting Author: Niels van der Baan, Maastricht University, Netherlands; **Co-Author:** Ellen Rusman, Faculty of Educational Sciences - Open University of the Netherlands, Netherlands; **Co-Author:** Tiuri van Rossum, Maastricht University, Netherlands; **Co-Author:** Wendy Nuis, Maastricht University, Netherlands; **Co-Author:** Jerome van Dongen, Hogeschool Zuyd, Netherlands; **Co-Author:** Simon Beausaert, Maastricht University, Netherlands

Organizational learning is pivotal to remain competitive and to adapt to the frequently changing labor market. Despite many efforts to achieve this, it remains challenging for organizations to implement effective interventions to foster organizational learning. The current study presents a review of empirically researched interventions aimed at fostering organizational learning. With this review we aimed to get insight into the underlying mechanisms of these interventions and how they impacted learning. To analyze these interventions and their underlying interventions, we used the CIMO-logics framework. Interventions were also categorized on individual, team, and organizational level according to the 4I-model. A total of 18 empirical studies were included in this review. Our review identified eight interventions that functioned on individual level, six interventions on team level, and four interventions on organizational level. Although the initial learning needs that the interventions aimed to address not always aligned with (the measurement of) the learning outcome of the intervention, which made it challenging to judge the effectivity of the intervention, the working mechanism underlying most interventions seemed to be social learning. In addition, none of the interventions addressed all three levels of analysis (individual, team, and organization). To achieve sustained organizational learning, it is recommended that interventions aimed at fostering organizational learning are designed coherently to function on all three levels within an organization: individual, team, and organizational level.

Individual and Contextual Correlates of Reflection at Work: A Review of the State of the Research

Keywords: Informal learning, Reflection, Review study, Workplace learning

Presenting Author: Gerhard Messmann, University of Regensburg, Germany; **Co-Author:** Mandy Hommel, OTH Amberg-Weiden, Germany

This contribution investigates how reflection at work relates to individual employee characteristics and contextual factors including workplace and organizational characteristics. We define reflection at work as informal individual cognitive activities focusing on one's work actions and action-related aspects. Understanding how reflection at work is facilitated is important because reflection allows employees to detect changes in work tasks and contexts, manage error situations, and more generally solve complex problems and recognize potential for change. We conducted a systematic mapping review of research on correlates of reflection at work and identified 49 studies reporting correlations between reflection at work and various individual and/or contextual factors. On the one hand, the review showed which theoretical categories were most frequently studied (e.g., knowledge, skills, and attitudes, reflective dispositions, motivational dispositions, goal orientations, and support). It also identified variables for which a substantial amount of evidence with a consistent correlational pattern is available (e.g., error orientation, competence, self-efficacy, learning goal orientation, or supervisor support all correlated positively with reflection). On the other hand, the review revealed areas that received comparably little attention across studies on reflection at work (e.g., emotional factors). By mapping the available evidence, the review guides future research on reflection at work by highlighting aspects needing further investigation or pointing out which variables to best include when studying reflection in neglected work domains. Furthermore, the review also holds important practical implications, for instance for work design, training design, or the creation of supportive social work environments.

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M107

Single Paper

Higher Education, Lifelong Learning

Professional Learning and Development in Higher Education

Keywords: Career development, Competencies, Cooperative/collaborative learning, Informal learning, Life-long learning, Longitudinal studies, Teacher/trainer professional development, Work-based learning, Workplace learning

Interest group: SIG 14 - Learning and Professional Development

Chairperson: Bastian de Jong, University of Amsterdam, Netherlands

Novice university teachers' learning from workplace tensions: A longitudinal multiple case study

Keywords: Informal learning, Longitudinal studies, Teacher/trainer professional development, Workplace learning

Presenting Author: Marije Eradus, University of Amsterdam, Netherlands; **Co-Author:** Loes de Jong, Risbo, Erasmus University Rotterdam, Netherlands; **Co-Author:** Natalie Pareja Roblin, University of Amsterdam, Netherlands; **Co-Author:** Monique Volman, University of Amsterdam, Netherlands

Since novice university teachers usually start without any formal training or education in teaching, they develop competencies through daily teaching experiences. These unfamiliar and unexpected experiences can generate tensions. Although tensions are frequently experienced as negative or challenging, they also contain learning potential. Previous research highlights the significance of tensions for teachers' professional learning and development; however, little is known about how this process exactly unfolds. Building on theories of workplace learning about antecedents (triggers), learning activities and mechanisms of learning, this longitudinal, multiple case study explored *when* and *how* novice university teachers learn from tensions. Data were collected through semi-structured interviews at the beginning and end of one academic year, and eight weekly diaries in between. Results show that learning from tensions was influenced by antecedents at both the individual (e.g., individual characteristics such as perfectionism) and the contextual level (e.g., a social and supportive environment), as well as by the characteristics of the tension itself (e.g., intensity, urgency, high impact, novelty, and unexpectedness). Learning occurred through, for example, reflection or validation. These findings contribute to a better understanding of how novice university teachers learn from the tensions they experience in the workplace and provide concrete guidelines to better tailor professional development initiatives.

University Teachers' Perceptions of Teaching Competencies and Professional Development Modalities

Keywords: Competencies, Life-long learning, Teacher/trainer professional development, Workplace learning

Presenting Author: Marilou Bélisle, Université de Sherbrooke, Canada; **Co-Author:** Marie-Pier Gingras, Université de Sherbrooke, Canada; **Co-Author:** Sawsen Lakhal, Université de Sherbrooke, Canada; **Co-Author:** Tanya Chichekian, Université de Sherbrooke, Canada; **Co-Author:** Patrick Lavoie, Université de Montréal, Canada; **Co-Author:** Nicolas Fernandez, Université de Montréal, Canada; **Co-Author:** Kathleen Lechasseur, Université Laval, Canada

Despite teaching being central to university mission, it remains overshadowed by research in prestige and recognition. Most university teachers enter their roles without formal pedagogical training, yet face increasing demands from diverse student populations, technological disruptions, and evolving assessment practices. While research demonstrates that teaching competencies directly influence student motivation, limited insight exists into how university teachers perceive their own competencies and how these perceptions relate to professional development engagement. This study examined teaching competency perceptions through a questionnaire distributed to 26,977 university teachers across Canada, yielding 1,060 complete responses. Participants rated their perceived competence on ten teaching competencies and reported their engagement with 14 professional development modalities. Non-parametric statistical analyses compared perceptions across gender, teaching experience, field of expertise, and pedagogical training. Results revealed moderately high to high perceived competence across all competencies. Significant patterns emerged: women reported higher perceived competence than men on eight of ten competencies; social and human sciences teachers reported higher perceptions than those in science, engineering, and technology; teaching experience positively associated with perceived competence; and pedagogical training (before or after beginning teaching) correlated with higher perceptions. Notably, *analyzing teaching practice* showed moderate correlations with ten professional development modalities, suggesting reflective practice functions both as outcome and motivator for professional development engagement. Findings illuminate how learning and work processes interact in university teaching. The relationship between *analysis of teaching practice* and multiple professional development modalities points to potential value in cultivating cultures where reflection, collaboration, and practice-based learning are central.

Personalized professional development: how personalization works in higher education

Keywords: Career development, Competencies, Teacher/trainer professional development, Workplace learning

Presenting Author: Fatemeh Janesarvatan, Maastricht University, Netherlands; **Presenting Author:** Alexandra Mihai, Maastricht University, Netherlands;

Presenting Author: Bas Giesbers, Maastricht University School of Business and Economics, Netherlands

Professional development (PD) in higher education is increasingly expected to align with academic staff's evolving needs and contexts, yet many institutional offerings remain standardized and difficult to adapt to individual trajectories (Cole, 2023; Thomas et al., 2016). This study examines how early- to mid-career university teachers conceptualize personalized PD and what mechanisms and conditions they perceive as necessary to make personalization feasible. We conducted semi-structured interviews with 17 early- to mid-career academic staff. The findings show that participants do not equate personalization with unlimited choice, rather, they envision a hybrid model that combines a shared baseline of core competences with guided pathways that enable role-based and career-stage differentiation. Teachers described key personalization mechanisms, barriers and enablers to personalization. This study contributes into how personalization can be designed as structured choice supported by stable setup, rather than as fully self-directed selection.

Organisational barriers of private companies and higher education in lifelong learning initiatives

Keywords: Cooperative/collaborative learning, Life-long learning, Work-based learning, Workplace learning

Presenting Author: Jimmy Jaldemark, Mid Sweden University, Sweden; **Co-Author:** Mikaela Backlund, Mid Sweden University, Sweden; **Co-Author:** Peter Ohman, Mid Sweden University, Sweden

This paper explores barriers that limit organisational development in private companies through higher education lifelong learning initiatives. Drawing on perspectives of networked and hybrid collaboration between universities and the surrounding society, the study addresses challenges in achieving continuous professional development that benefits both individuals and organisations. Two research questions guide the analysis: (1) which barriers stem from limitations within private companies, and (2) which barriers are related to limitations within higher education institutions. The study is based on a lifelong learning initiative developed in collaboration with a network of financially oriented companies. Data were collected from evaluations of short, flexible, technology-enhanced professional development courses that incorporated informal work-related tasks and company-relevant data. Additional material included conversations with company representatives, email interviews with teachers, and email communication between teachers and course participants. Findings from the thematic analysis indicate limited organisational development outcomes due to the combined effect of several barriers. Companies often lacked strategic insight into the value of professional development for long-term organisational benefit, provided insufficient support for organisational learning, and struggled to generate results applicable to workplace needs. Universities, meanwhile, were influenced by a strong educational culture focused on individual learning, making it difficult to integrate theory and practice and to design teaching and assessment that support organisational learning. Digital constraints, such as incompatible systems, firewalls, and confidentiality requirements, further complicated collaboration and reduced flexibility. The study highlights the need for stronger managerial engagement, improved use of organisation-relevant data, and redesigned assessment and follow-up strategies.

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Roundtable

Cognitive Science, Lifelong Learning

Artificial Intelligence and Professional Learning Practices

Keywords: Artificial Intelligence, Cognitive skills, Communication skills, Competencies, Computer-assisted learning, Ethics, Qualitative methods, Reflection, Workplace learning

Interest group: SIG 14 - Learning and Professional Development

Chairperson: Aron Decuyper, Ghent University, Belgium

How Do Auditors Think with AI? A Qualitative Study of Prompting Behavior in Complex Judgement Tasks

Keywords: Artificial Intelligence, Cognitive skills, Qualitative methods, Workplace learning

Presenting Author:Lara Ritter, Maastricht University, Netherlands; **Co-Author:**Wim Gijsselaers, Maastricht University, Netherlands; **Co-Author:**Roger Meuwissen, Maastricht University, Netherlands; **Co-Author:**Therese Grohnert, Maastricht University, Netherlands; **Co-Author:**Laurie Delnoij, Maastricht University SBE, Ts 53, Netherlands

As LLM-based decision support systems increasingly aid the judgment and decision-making processes of professionals, the question that arises is not simply if and when these professionals rely on AI support, but also how they interact with it. The current study aims to move beyond classic outcome metrics of reliance on technology and judgment accuracy and, instead, investigates the interaction between humans and AI. Analyzing data from human-AI chat protocols, collected during a complex auditing judgment task, enables a holistic, qualitative analysis of the thought processes and micro-decisions of participants using AI. The chat protocols give rich insights into differences in use (varying from search, analysis, or synthesis of information) that can act as indicators or precursors of learning and reliance patterns. In this roundtable discussion, I aim to discuss potential frameworks and refine the coding scheme for the qualitative analysis.

Understanding Reflection of AI Software Developers in the Context of Ethical Issues

Keywords: Artificial Intelligence, Ethics, Reflection, Workplace learning

Presenting Author:Cecilia Schramm, University of Twente, Netherlands; **Co-Author:**Sebastian Dennerlein, IT:U Interdisciplinary Transformation University Austria, Austria; **Co-Author:**Frank Leone, University of Twente, Netherlands; **Co-Author:**Maaik Endedijk, University of Twente, Netherlands

As the main actors in creating and implementing Artificial Intelligence (AI) systems, software development teams bear responsibility in designing these systems' behavior and outputs. Each member of the team, including developers, designers, and managers, is responsible, individually and collaboratively, for ethically reflecting about the different paths that can be chosen within their locus of control. Therefore, this ongoing study investigates how AI development teams identify and resolve ethical issues they are confronted with via interviews of seven AI development team, consisting of a group interview with the full team and subsequent individual interviews with the team members. The group interviews are used to identify relevant ethical issues the teams had faced, while the individual interviews are used to collect the participants' personal perspectives on the developmental trajectory of the issues and to determine why, how, and about what they reflected, based on Mezirow's transformative learning cycle and Boud's reflection processes. Our preliminary findings show that ethically aware developers indeed go through the first dilemma stage of transformative learning, often triggered by relating past experiences and/or knowledge to a new situation they are presented with, and consequently discuss these new beliefs with colleagues. The findings will eventually be transformed into a model of how ethical reflection takes place within AI software development teams, including influencing factors. This in turn will inform a future planned study on how to support ethical reflection in AI development teams and hopefully further intervention research on ethical reflection in AI development teams more broadly.

"You can talk to me" - Chatbots' potential for fostering counselors' professional learning

Keywords: Artificial Intelligence, Communication skills, Competencies, Computer-assisted learning

Presenting Author:Josef Strasser, University of Kaiserslautern Landau (RPTU), Germany; **Co-Author:**Max Tantik, RPTU Kaiserslautern Landau, Germany; **Co-Author:**Vera Eling, RPTU Kaiserslautern Landau, Germany

The development of professional expertise in counseling is a long process that requires sustained practice, exposure to diverse and emotionally challenging client situations, and opportunities for reflection. In practice, however, counselors encounter only limited opportunities to systematically rehearse specific skills, experiment with alternative interventions, or receive differentiated feedback on the effects of their actions. Traditional training methods such as role-play are constrained by the artificiality of the situation, limited scenario variability, and restricted emotional engagement. Recent advances in generative artificial intelligence suggest that AI-based chatbots may offer a promising supplement to established approaches. Chatbots can simulate a wide range of conversations, allow learners to experiment in a protected environment, and provide immediate, targeted feedback, thereby supporting deliberate practice and reflective learning. The ongoing study explores the potential of chatbots for acquiring counseling-relevant competencies in professional training. Counseling novices in the field of school counseling (current N = 58) participated in seminars on person-centered counseling that employed either traditional role-play or chatbot-based simulated counseling conversations. Participants completed questionnaires at three measurement points assessing counseling-related knowledge, skills, and self-efficacy, as well as their evaluations of the instructional methods. Preliminary results suggest positive effects on counseling competence and self-efficacy. Chatbot-based simulations were perceived as more realistic and more challenging than role-play, and the feedback received was rated as more differentiated and precise. At the same time, limitations emerged, such as repetitive conversational loops. Overall, the findings highlight both the potential and the constraints of AI-based chatbots for professional learning and development in counseling.

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Single Paper

Learning and Special Education, Lifelong Learning

Learning Cultures, Agency and Professional Growth in Care Settings

Keywords: Adult education, Cultural diversity, Digital literacy, Ethnographic methods, Informal learning, Learning environments, Life-long learning, Mixed-method research, Professional identity, Qualitative methods, Work-based learning, Workplace learning

Interest group: SIG 14 - Learning and Professional Development

Chairperson: Apostolia Roka, Göteborg University, Greece

Generations and learning at work in hospital context

Keywords: Cultural diversity, Ethnographic methods, Informal learning, Workplace learning

Presenting Author:Susanna Paloniemi, University of Jyväskylä, Finland; **Co-Author:**Panu Forsman, University of Jyväskylä, Finland; **Co-Author:**Kaija Collin, University of Jyväskylä, Finland

Current working life is increasingly multi-generational. Despite research on the characteristics of single generations and inter-generational relationships at work, we lack an understanding of the meaning of generationality in professional learning in work contexts. In this study, our aim is to reach an elaborated understanding of how generations are culturally constructed and manifested in work communities. We avoid approaching generations as pre-existing, solely age-related, and unproblematic entities or categories. Informed by Mannheim's (1952) social generation theory and practice-based learning theory (Gherardi, 2019), we apply the social-ecological theory of generations (Lyons et al., 2019) as a frame of reference. The study is part of an ongoing research project 'Towards sustainability of multi-generational learning at work' (GENTRY). The data utilized here consists of 23 thematic life-history interviews of personnel working in a Finnish public hospital department of obstetrics and gynecology during the year 2025. Further, episodes from ethnographic field observation data (Hammersley & Atkinson, 2019) are utilized in identifying and illustrating multi-generational learning practices in personnel's everyday work. The data is analyzed via applying thematic (Braun & Clarke, 2006) and narrative (Cortazzi, 2001) analysis. The findings illustrate the construction of various generations in the work community, and how learning is manifested in these constructions in everyday work practices. The study contributes to the field of researching professional learning and development at work via elaboration and novel examination of social generations in working life, especially in terms of the existence of various learning generations at work.

Carrying Learning Together: Youth Care Professionals' Experiences of Learning Culture

Keywords: Informal learning, Learning environments, Qualitative methods, Workplace learning

Presenting Author:Lara Wulleman, University of Amsterdam, Netherlands; **Co-Author:**Aurelie Lange, Amsterdam University of Applied Sciences (AUAS), Netherlands; **Co-Author:**Marija Maric, University of Amsterdam, Netherlands

Youth care professionals work in chronically pressured environments with high caseloads, emotional demands, and organizational instability. In *** youth care, recent policy initiatives frame ongoing professional learning and strong learning cultures as key to a sustainable system, yet little is known about how these cultures are experienced in everyday work. This qualitative study examines how youth care professionals experience learning culture and how responsibility for learning is lived, shared, and negotiated in practice.

We conducted semi-structured interviews with nine professionals (seven youth care workers, two behavioral specialists) in three youth care organizations, followed by dialogic group sessions with 28 participants, including team leaders and staff responsible for professional development and quality. Using reflexive thematic analysis from a constructivist–interpretivist stance, we developed an experiential framework describing how responsibility for learning is carried in practice.

Four recurring positions emerged: (1) learning as a shared, collective responsibility; (2) encouraged individual responsibility within a supportive culture; (3) gradual withdrawal of responsibility for learning under pressure; and (4) learning carried alone when organizational support is lacking. Across these positions, three conditions were critical for a strong learning culture: learning being consistently valued and protected as integral to work; recognition of professional

expertise and contribution; and psychological safety to be both expert and learner. The study shows learning culture as continuously enacted and negotiated rather than a fixed organizational feature, with implications for leadership, policy, and workforce sustainability in youth care.

Vocational knowledge of youth care professionals at work

Keywords: Informal learning, Life-long learning, Mixed-method research, Workplace learning

Presenting Author:Annoesjka Boersma, Hogeschool Utrecht, Netherlands; **Presenting Author:**Lieke Ceelen, Hogeschool Utrecht (University of Applied Sciences Utrecht), Netherlands; **Co-Author:**Aurelie Lange, Hogeschool van Amsterdam, Netherlands; **Co-Author:**Josien Engel, Hogeschool Utrecht, Netherlands; **Co-Author:**Miriam Mayer, Open University of the Netherlands, Netherlands; **Co-Author:**Elly de Bruijn, Open University of the Netherlands, Netherlands

Youth care professionals operate in complex and demanding situations, where high workloads and staff turnover put pressure on quality of care and professional learning. Professional development initiatives often emphasize formal knowledge, guidelines, and protocols, insufficiently addressing the complexity of everyday professional practice. This study explores the vocational knowledge that youth care professionals use in their daily work with young people and parents, with specific attention to professionals' practical wisdom. Semi-structured interviews with 25 experienced professionals in specialized youth care were conducted, using *rich pictures* to elicit reflection on professional action. Using the CIMO logic, the study articulates a coherent body of vocational knowledge that can inform workplace learning and professional development.

Professional Agency Dimensions Across Healthcare Working Contexts

Keywords: Adult education, Digital literacy, Professional identity, Work-based learning

Presenting Author:Minna Ylönen, Finnish Institute of Occupational Health, Finland; **Co-Author:**Pauliina Rikala, University of Jyväskylä, Finland; **Co-Author:**Petri Kulmala, University of Oulu, Finland, Finland; **Co-Author:**Rajja Hämäläinen, University of Jyväskylä, Finland

Healthcare professionals work in increasingly complex and digitally transforming environments that challenge their professional agency. This study examines how three dimensions of professional agency—identity-based, influence-based and digital agency—are manifested and negotiated across four work contexts: administrative, development, patient and professional community work. Using abductive thematic analysis of fourteen interviews, the study identified four context-specific manifestations: constrained and fragmented agency in administrative work, expansive and creative agency in development work, meaning-driven relational agency in patient work and collectively supported agency in professional communities. Four negotiation patterns emerged: protective coping, proactive growth, value-anchored relational strategies, and collaborative reinforcement. Identity-based agency was strongest in patient work, while influence-based agency was most constrained in administrative work. Digital agency appeared emotionally charged, context-dependent and unevenly supported. This study conceptualizes digital agency as integral to professional agency and introduces a framework illustrating how organizational conditions shape agency and professionalism in digital transformation.

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Roundtable

Higher Education, Lifelong Learning

Lifelong Learning and Transformation in Contemporary Work

Keywords: Career development, Informal learning, Life-long learning, Professional identity, Qualitative methods, Reflection, Teacher/trainer professional development, Workplace innovation, Workplace learning

Interest group: SIG 14 - Learning and Professional Development

Chairperson: Martin Rehm, University of Southern Denmark, Denmark

A Collaborative Self-Study of Early-Career Faculty Pedagogical Becoming in a Cross-Cultural Context

Keywords: Career development, Professional identity, Reflection, Teacher/trainer professional development

Presenting Author:Xingya XU, The Chinese University of Hong Kong, Hong Kong; **Co-Author:**Jiaxiu CAI, The Chinese University of Hong Kong, Hong Kong;

Co-Author:Shuaizhong WANG, The Chinese University of Hong Kong, Hong Kong

This collaborative self-study addresses a critical gap in research on early-career academics: the lack of a process-oriented understanding of how faculty with hybrid, globally-dispersed educational trajectories navigate their professional identity formation. We are three faculty members (psychology, urban design, architecture) who share a unique path: undergraduate education in Mainland China, doctoral training in Western institutions (USA, Netherlands, Switzerland), and now faculty appointments in Hong Kong—a dynamic academic “third space” merging Eastern and Western cultures. Grounded in Self-Study of Teacher Education Practices (S-STEP), we integrate Schwind’s structured Narrative Reflective Process (NRP) to systematically examine our shared experiences from the first three years of teaching. Through activities like constructing “Academic Lifelines” and exploring “Teaching Identity Metaphors,” we engage in critical friendship dialogues to identify common patterns, uncover tacit cultural and pedagogical assumptions, and map enablers and inhibitors of our development. We seek collegial dialogue at this roundtable on two key challenges: the methodological complexities of analyzing our multi-layered narrative data, and strategies for translating personal reflective insights into practical knowledge to support a globally mobile academic workforce. Our study aims to contribute a nuanced, dynamic model of “pedagogical becoming” relevant to faculty development and cross-cultural education.

Lifelong learning as a continuous process: A regional approach

Keywords: Career development, Informal learning, Life-long learning, Workplace learning

Presenting Author:Evelien Ketelaar, HU University of Applied Sciences Utrecht, Netherlands; **Presenting Author:**Ilya Zitter, Hogeschool Utrecht (University of Applied Sciences Utrecht), Netherlands; **Co-Author:**Elco Buurma, HU University of Applied Sciences, Netherlands

The labour market is undergoing rapid transformation, requiring individuals to engage in continuous development throughout their lives. This round table explores how lifelong learning (LLL) can be designed and enacted by drawing on research into diverse regional initiatives aimed at making LLL feasible and accessible, through a regional approach. We approach lifelong learning as a continuous process of learning throughout life, through experiences, reflection, collaboration, work, and education (Billett, 2023, 2024). Workplace learning plays a crucial role in this process; it constitutes an ongoing continuum from incidental and implicit learning to more intentional and goal-oriented actions, shaped by both the employee and the work context (Wijga et al., 2025). To understand how the regional initiatives (n=11) designed and enacted LLL, we analysed the interventions which are intended to trigger learning of their target groups. We distinguish five types of interventions: education, community building, assessment and qualification of learning, matching, and career guidance. We see workplace learning as a cross-cutting element that should be an integral part of each intervention. Additionally, we examined how the initiatives collaborate with employers and industry, as well as regional stakeholders, to create the conditions necessary to achieve their intended outcomes. For this round table, we invite you to reflect with us on the meaning of our findings, as well as more broadly on how we understand and shape lifelong learning in a regional context.

Rethinking work and professional learning and development in digital transformation

Keywords: Informal learning, Life-long learning, Workplace innovation, Workplace learning

Presenting Author:Regina Mulder, University of Regensburg, Germany; **Presenting Author:**Monika Nerland, University of Oslo, Norway; **Co-Author:**Koula Charitonos, The Open university UK, United Kingdom; **Co-Author:**Francisco Duran Del Fierro, UCL, United Kingdom; **Co-Author:**Vanessa Hämmerl, University of Regensburg, Germany; **Co-Author:**Allison Littlejohn, UCL, United Kingdom; **Co-Author:**Asa Makitalo, University of Gothenburg, Sweden

Digital transformation affects work. Changes in and at work due to digitalization can affect health and productivity and other areas, making employees' professional development vital for themselves and for effective workplaces. There have been empirical studies on changes at work due to new technologies. However, little is known about how work tasks change, especially work that arises that is not visible to colleagues and supervisors, or is not recognized, nor the consequences of that part of the work. Work characteristics that remain hidden, invisible and/or unacknowledged can be termed meta-work. All this leads to the following questions: What are the consequences of changes at work due to new technologies for meta-work? How do employees learn to deal with meta-work? This provocation paper has been developed using the experiences in and results of empirical research on work and professional development within diverse domains, different kind of jobs and in different countries. The ideas were developed through several rounds of discussions by the researchers through a funded network project and discussions at different international conferences with external experts. In this roundtable session, the authors will discuss, based on empirical evidence, the effects of meta-work during digital transformation at work. Discussed will be a) ethical issues concerning work that is not visible or not recognized, b) the consequences thereof for investigating professional and organisational development, and c) empirical evidence on concrete measures to foster learning and professional development under these circumstances (of invisible work, and ongoing changes).

How and when do learning community participants experience transformative learning?

Keywords: Informal learning, Life-long learning, Qualitative methods, Workplace learning

Presenting Author: Margot van Rees, Saxion University of Applied Sciences, Netherlands; **Co-Author:** Maaïke Endedijk, University of Twente, Netherlands; **Co-Author:** Frank Leoné, University of Twente, Netherlands

Accelerating the energy and circularity transitions requires organizations and employees to continuously develop and enact new ways of working. Learning communities, public-private collaborations in which learning, working, and innovating are combined, are established to support such processes across organizational and ecosystem levels. While prior research highlights the relevance of transformative learning (TL) for addressing societal challenges, little is known about how TL unfolds within learning communities that operate in and across organizations. This qualitative study explores how employees experience and make sense of TL within such communities. Drawing on Mezirow's theory of TL, the study conceptualizes transformation as a process involving disorienting dilemmas, critical reflection, reflective dialogue, and subsequent changes in action. A life history methodology was employed, using semi-structured interviews supported by co-constructed visual timelines to elicit participants' narratives of learning and change over time. The analyses focus on identifying patterns in how employees experience and make sense of TL within learning communities, including the role of disorienting dilemmas, critical reflection, dialogue with others, and subsequent changes in professional practice. During the conference, the preliminary findings will be presented and discussed with the audience during a roundtable.

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Single Paper

Learning and Social Interaction, Motivational, Social and Affective Processes

Team Learning, Diversity and Collaborative Processes

Keywords: Cooperative/collaborative learning, Cultural diversity, Emotion and affect, Engagement, Informal learning, Intercultural competence, Peer interaction, Quantitative methods, Reflection, Social aspects of learning and work, Teamwork, Workplace learning

Interest group: SIG 14 - Learning and Professional Development

Chairperson: Erica Bouw, HU University of Applied Sciences, Netherlands

The Relationship of Engagement and Transactivity in Teams

Keywords: Cooperative/collaborative learning, Engagement, Quantitative methods, Teamwork

Presenting Author: David Otten, University of Twente, Netherlands; **Co-Author:** Pantelis M. Papadopoulos, University of Twente, Netherlands; **Co-Author:** Maryam Heari, University of Twente, Netherlands; **Co-Author:** Maaïke Endedijk, University of Twente, Netherlands

Team learning behaviors, such as constructive conflict and co-construction, require the participation and engagement of all team members, which is crucial for building shared mental models. Engaged team members leverage one another by connecting novel information to prior contributions, a process also known as transactivity. In this study, we examine the relationship between engagement dimensions (i.e., behavioral, cognitive, and emotional) and transactivity (i.e., novelty and reference). Previously employed measures of engagement and transactivity often exhibit volatile patterns, making the detection of causal relationships difficult. Therefore, we will explore the use of Cross-Spectral Analysis (CSA) to detect recurring patterns between engagement and transactivity dimensions. We thereby aim to reveal patterns of recurring building blocks in team learning. This will provide insights for team facilitators on what to prioritize when supporting collaboration or co-construction.

What Happens When Teams Reflect Together? Exploring Emotions During Team Reflexivity Interventions

Keywords: Cooperative/collaborative learning, Emotion and affect, Reflection, Teamwork

Presenting Author: Lieke Luchten, University of Antwerp, Belgium; **Co-Author:** Piet Van den Bossche, University of Antwerp, Belgium; **Co-Author:** Sven De Maeyer, Antwerp University, Belgium

Team reflexivity, or the collective process through which teams reflect on and adapt their goals, strategies, and working processes, has been linked to beneficial team outcomes. Although a growing body of research has examined the antecedents and outcomes of team reflexivity, emotions remain largely unexplored in this process. This is striking, given that team reflexivity involves evaluative and potentially affect-laden activities that may evoke emotional reactions among team members. The present study addresses this gap by examining the emotional dynamics of team reflexivity. Specifically, it investigates (a) which emotions team members experience during team reflexivity and (b) how these emotions co-occur with specific reflexive behaviors. The study is conducted with master's students in training and education sciences working in project teams on an authentic R&D task. Teams participate in a facilitated team reflexivity intervention. Multimodal data are collected, including audio- and video recordings and physiological measures of emotional arousal via electrodermal activity. Team reflexive behaviors are coded using a mixed deductive-inductive approach, while emotional valence and arousal are assessed through speech-based emotion analysis and physiological indicators. Preliminary findings suggest that team reflexivity is an emotional process that is inherently dynamic, with emotions and arousal fluctuating over time rather than remaining stable or unfolding linearly. These insights contribute to research on collaborative learning and teamwork by uncovering team reflexivity as an emotional process and offer implications for the design of reflexivity interventions.

Below the Team Level: Interaction Patterns of Team Learning in Manufacturing Settings

Keywords: Informal learning, Peer interaction, Teamwork, Workplace learning

Presenting Author: Leon Gnad, Maastricht University, Netherlands; **Co-Author:** Wim Gijssels, Maastricht University, Netherlands; **Co-Author:** Therese Grohnert, Maastricht University, Netherlands; **Co-Author:** Laurie Delnoij, Maastricht University SBE, Ts 53, Netherlands

Learning at the workplace often unfolds through specific interactions between team members rather than uniformly across entire teams. This study examines team learning from an interaction-level perspective in manufacturing shift teams. Using survey data on 722 learning interactions, latent profile analysis identified distinct configurations of learning behaviours and facilitating states. Findings show that active learning can occur under unsafe conditions, while psychologically safe interactions may involve only basic learning behaviours, highlighting a nuanced interplay between states and behaviours. Comparisons with team-level measures indicate that some interaction-level learning dynamics remain indistinguishable when learning is assessed through aggregated team-level representations. The study underscores the value of interaction-level approaches for understanding learning in contemporary work settings.

From Diversity-as-Trait to Diversity-as-Process: Intercultural Collaboration in VET Teams

Keywords: Cultural diversity, Intercultural competence, Social aspects of learning and work, Teamwork

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This study investigates how culturally diverse vocational education teams learn and work. Although intercultural teacher collaboration is increasingly common, it is often described in terms of tensions rather than how cultural heterogeneity can become a shared resource that strengthens both professional learning and daily work. To address this, the study develops a framework for team intercultural competence (TIC)—the capability to recognise, negotiate and leverage cultural differences through cultural permeability, shared intercultural cognitions and behavioural adaptability—and cultural diversity utilisation (CDU), defined as the purposeful mobilisation of diversity in team tasks for the vocational education context. A multiple case study was conducted in three culturally diverse vocational education teams using shadowing, stimulated-recall focus groups and Rich Picture interviews. Analysis involved within-case and cross-case analysis. The three cases form a developmental continuum of intercultural team dynamics: from obstructed, where cultural issues remain unspoken; to emerging, where awareness grows but practices are inconsistent; to synergy-oriented, where cultural experiences are actively used in pedagogical design and collaboration. Across cases, TIC and CDU emerge as dynamic, relational processes rather than fixed team traits. When teams surface differences, share sensemaking and distribute intercultural work, cultural diversity can become a collective learning resource that enhances both collaboration and work quality.

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Collaboration, Boundary Crossing and Learning in Vocational Education

Keywords: Communities of learners and/or practice, Cooperative/collaborative learning, Creativity, Ethnographic methods, Informal learning, Learning environments, Longitudinal studies, Qualitative methods, Social interaction, Teacher/trainer professional development, Technology-enhanced learning,

Vocational education and apprenticeship training, Work-based learning, Workplace learning

Interest group: SIG 14 - Learning and Professional Development

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Learning proper ergonomic practices in vocational education workshops

Keywords: Ethnographic methods, Qualitative methods, Social interaction, Vocational education and apprenticeship training

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This study investigates how teaching based on scientific theories can support vocational students' learning of proper ergonomic practices in vocational workshop settings. The study employs the action research-oriented method Learning study, and data consist of video-recordings from three iterative cycles of teaching ergonomics in three different vocational programmes, as well as interviews with focus students carried out immediately after the video-recorded teaching sessions. The teaching has been based on the teaching theory CAVTA (Conversation Analysis and Variation Theory Approach). This theory emphasises the use of dialogue and variation as pedagogical tools to create situations in which students are given opportunities to display their knowledge and understanding of the content to be learned using different semiotic resources while experiencing variation during practical performance. Findings show that teaching based on CAVTA enabled students to publicly display their knowledge and understanding of how to work in ergonomically appropriate ways. This made it possible for teachers to evaluate and confirm the students' displayed knowledge and understanding of proper ergonomic practices. Furthermore, analysis of the students' accounts in the interviews conducted after the teaching sessions shows that, when conceptualising their own learning in ergonomics, they related their learning to embodied sensations. The study contributes empirical knowledge about how vocational teachers can use scientific theories in their teaching to create opportunities for students to learn how to work in proper working positions.

Fostering Collaborative Creativity via Co-Creative Platforms in Social Sciences Vocational Schools

Keywords: Cooperative/collaborative learning, Creativity, Technology-enhanced learning, Vocational education and apprenticeship training

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Rapid economic, technological, and social changes have reshaped labour market demands, requiring vocational education and training (VET) systems to foster transferable competences such as creativity, collaboration, and problem-solving. This study examines how a technology-mediated, cocreative project supports the development of collaborative creativity among students in initial vocational education and training (IVET). The research adopted a qualitative case study design involving 19 IVET students and two teachers. Using a Project-Based Learning (PBL) approach, students were challenged to design and implement practical workshops in a civic centre aimed at developing specific cognitive functions for people in situations of dependency. The cocreative process was supported by Viacocrea, an interactive digital platform designed to scaffold key collaborative creativity processes. Data were collected through the analysis of students' final products, platform interaction logs, and surveys completed by users and teachers. Findings indicate high levels of active participation across all groups throughout the creative process, evidenced by sustained collaborative engagement, the generation of a reasonable number of ideas, and high-volume written production. The resulting workshops were perceived as high-quality, original, and well adapted to real-users' needs. These results align with theoretical perspectives on collaborative creativity, highlighting the role of digital tools as pedagogical mediators in structuring and sustaining cocreative processes in IVET contexts.

Exploring Vocational Teachers' Informal Learning Outcomes Through ESM and Latent Class Analysis

Keywords: Informal learning, Longitudinal studies, Teacher/trainer professional development, Workplace learning

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This study investigates outcomes of vocational teachers' informal workplace learning during daily work activities. While formal learning initiatives are commonly emphasized, substantial learning occurs informally through self-directed activities or as incidental by-products of work activities. Despite growing recognition of informal learning's importance for teacher development, the specific knowledge, skills and attitudes teachers gain remain largely under-researched. Current outcome frameworks are exploratory rather than empirically grounded, limiting the ability to support and enhance workplace learning. Using app-based experience sampling, we analyzed in-situ data from 467 vocational teachers in Germany who recorded work activities and learning outcomes from March to October 2022, yielding 41,897 entries. A systematically developed framework distinguishes job-specific and general knowledge and skills, attitudes, and other outcomes. Preliminary analysis of 693 learning outcome statements reveals that job-specific knowledge and skills dominate (80 %), particularly content and pedagogical knowledge. Perceived learning varied: Formal training ($M = 3.34$) and non-formal training ($M = 3.18$) showed highest levels, while everyday activities such as classroom teaching ($M = 0.71$) and preparation ($M = 0.66$) showed moderate levels, though these constitute teachers' primary work contexts. Among entries reporting perceived learning, only 5.5 % contained articulated outcome statements. Planned latent class analysis will identify distinct teacher profiles based on learning outcome patterns. Understanding these profiles can inform professional development strategies leveraging activities most conducive to learning for different teacher subgroups. This study contributes to understanding how informal workplace learning shapes educational practice and enhances teacher effectiveness through recognition of learning embedded in daily routines.

Co-constructing across boundaries in vocational education: boundary crossers, spaces, and objects

Keywords: Communities of learners and/or practice, Learning environments, Vocational education and apprenticeship training, Work-based learning

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This contribution focuses on the co-construction of hybrid learning environments in vocational education (upper secondary vocational education and university of applied sciences), in which students, professionals, teachers, and occasionally researchers work and learn together across the boundaries of their respective practices. Designing and implementing such learning environments is complex and may lead to tensions between education and professional practice, which in turn puts the sustainability of these environments under pressure. The study presented in this contribution explores the role of boundary crossers, boundary spaces, and boundary objects in the co-construction process. A case study was conducted in five learning environments. Data were collected through interviews and a timeline session with stakeholders of each learning environment. The findings show that boundary crossers—such as teachers and students—are crucial for ensuring both continuity and innovation. Boundary spaces manifested primarily as physical locations: existing workplaces or newly created meeting spaces that enabled collaboration and dialogue. Boundary objects, such as feedback methods and student-produced artefacts, supported coordination and joint meaning making. Explicitly assigning roles and establishing clear governance arrangements strengthened the co-construction process. The conclusion is that the three boundary elements, both individually and in interaction, contribute to connecting the worlds of education and professional practice. Their synergy appears to be a prerequisite for sustainable co-construction, with students playing a dynamic role as temporary boundary crossers.