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10 June 2026 11:15 - 12:45
Main Building, U4075
Single Paper
Teaching and Teacher Education

Single Paper paper_type_1 session 2

Keywords: Attitudes and beliefs, Beginning teachers, Induction, Multicultural education, Primary education, Quantitative methods, Student-teacher interactions, Teacher

Interest group: SIG 11 - Teaching and Teacher Education

Chairperson: Marjolein Deunk, University of Groningen, Netherlands

How do experienced teachers conceptualize students' talent compared to student teachers?

Keywords: Attitudes and beliefs, Beginning teachers, Quantitative methods, Teacher

Presenting Author: Julia Klug, PH Salzburg, Austria; **Co-Author:** Silke Rogl, PH Salzburg/ÖZBF, Austria; **Co-Author:** Kathrin Hamader, PH Salzburg, Austria

Teachers' beliefs about students' talent are relevant to educational processes. Talent beliefs in mathematics, measured in a six-dimensional model, predict cognitively activating teaching. Verbal talent beliefs have only been assessed among student teachers. There is no study yet unpacking experienced teachers' talent beliefs in both domains. Thus, we aimed to investigate how experienced teachers conceptualize students' talent compared to student teachers. 307 experienced teachers and 215 student teachers worked on the verbal and mathematics talent beliefs questionnaires. Six-dimensional measurement models fit equally well for both groups. We find statistically significant mean differences for experienced teachers compared to student teachers' talent beliefs in four dimensions: *passion, domain-specific skills, internal factors, and external factors – teacher*. Experienced teachers agree more that talented students have high passion and domain-specific skills and less that students' internal factors and teacher behaviour are crucial. Future studies could address if domain-specific talent beliefs predict aspects of teaching quality.

Beginning primary school teachers' work characteristics related to well-being and intention to quit

Keywords: Beginning teachers, Induction, Primary education, Quantitative methods

Presenting Author: Fenny van Daalen-Visscher, University of Groningen, Netherlands; **Co-Author:** Hanke Korpershoek, University of Groningen, Netherlands;

Co-Author: Matthijs Warrens, University of Groningen, Netherlands; **Co-Author:** Thibault Coppe, Université Libre de Bruxelles (ULB), Belgium

In order to find new leads to retain beginning primary school teachers for the profession, we studied the relation between their work characteristics, well-being and intention to quit. We developed a questionnaire that captured a comprehensive set of experienced job demands and job resources identified in a preliminary study, as well as teachers' levels of well-being and intention to quit. A total of 248 beginning teachers participated. Using moderated mediation analysis conducted within a path model, we found that job resources were endorsed more strongly than job demands. Job resources were associated with well-being and indirectly with intention to quit through well-being. Job demands were associated with intention to quit but not with well-being. Finally, interactions between job demands and resources mitigate the main effects of both on well-being and intention to quit.

Profiles of work characteristics of beginning teachers in primary education

Keywords: Beginning teachers, Induction, Primary education, Quantitative methods

Presenting Author: Fenny van Daalen-Visscher, University of Groningen, Netherlands; **Co-Author:** Hanke Korpershoek, University of Groningen, Netherlands;

Co-Author: Matthijs Warrens, University of Groningen, Netherlands; **Co-Author:** Thibault Coppe, Université Libre de Bruxelles (ULB), Belgium

Attrition of beginning teachers is one of the prominent causes of teacher shortages in primary education. Therefore a focus on beginning teacher retention seems relevant. Work characteristics of beginning teachers, and interactions between them, are related to well-being and intentions to quit, which is a strong predictor of attrition. Attrition is best understood as an outcome of a set of interdependent factors rather than a single factor alone. We conducted a latent profile analysis of a comprehensive set of work characteristics of beginning primary school teachers. Our research questions were: What beginning primary school teacher profiles emerge when considering their experienced demanding and resourceful work characteristics, well-being at work, and intention to quit? And how do teachers within these profiles differ? Preliminary results indicate four profiles.

Teacher and Student Beliefs Towards Multilingualism: A Multilevel Analysis

Keywords: Multicultural education, Quantitative methods, Student-teacher interactions, Teacher

Presenting Author: Victoria Bertram, DIPF | Leibniz-Institute for Research and Information in Education, Germany; **Co-Author:** Katharina Maria Schneider, University of Konstanz, Germany; **Co-Author:** Valentina Reitenbach, BUW | University of Wuppertal, Germany; **Co-Author:** Jasmin Decristan, University of Wuppertal; IDEa-Research Center, Germany; **Co-Author:** Dominique Rauch, Ludwigsburg University of Education, Germany

Teacher beliefs are central to professional competence. In linguistically diverse classrooms, positive teacher beliefs towards multilingualism can shape how students' family languages are valued and used as a resource for learning. In a multilevel regression analysis, we examined predictors of teachers' beliefs towards multilingualism and the relationship to their students' beliefs towards multilingualism. Data from 48 fourth-grade teachers in Germany and their 873 students were analyzed. The results showed that teachers' multilingualism and multilingual classroom composition did not significantly predict teachers' beliefs, however teachers' beliefs towards multilingualism positively predicted their students' beliefs towards multilingualism. The findings highlight the importance of fostering positive beliefs towards multilingualism in teachers through professional development, as those beliefs play a major role for their students.

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Porthania P724
Single Paper
Teaching and Teacher Education

Single Paper paper_type_1 session 15

Keywords: Competence development, Experimental studies, In-service teacher education, Professional development interventions, Quantitative methods, Teacher education, Teacher professional development, Teaching innovation or innovative teaching practices

Interest group: SIG 11 - Teaching and Teacher Education

Chairperson: Marieke Thurlings, Eindhoven University of Technology, Netherlands

Entrepreneurial Pedagogy in Teacher Education: Insights from Finnish Teacher Educators

Keywords: Competence development, Teacher education, Teacher professional development, Teaching innovation or innovative teaching practices

Presenting Author: Katharina Schild, Thurgau University of Teacher Education, Switzerland

Entrepreneurial pedagogy promotes creativity, initiative, and problem-solving. Competences that are essential for teachers to address complex educational and societal challenges. While Finland has integrated entrepreneurial pedagogy into its national education policy since 1994, little is known about how it is conveyed within teacher education. This qualitative study explores how Finnish teacher educators in secondary teacher education understand and implement entrepreneurial pedagogy. Data were collected through a Nominal Group Technique workshop (N=8) and expert interviews (N=7) and analyzed using reflexive thematic analysis. Findings highlight teacher educators as reflective change agents who model entrepreneurial mindsets through experiential, collaborative, and competence-oriented teaching practices. The study contributes to understanding how reflective and innovative approaches to teacher education can foster entrepreneurial learning cultures in higher education.

How to promote early career teachers' work engagement

Keywords: In-service teacher education, Quantitative methods, Teacher education, Teacher professional development

Presenting Author: Liyuan E, University of Helsinki, Finland; **Co-Author:** Jenni Sullanmaa, University of Helsinki, Finland; **Co-Author:** Kirsi Pyhältö, University of Helsinki, Finland; **Co-Author:** Auli Toom, University of Helsinki, Finland

Work engagement enables teachers to experience positive emotions, be more satisfied with their job, have better work performance, and transmit their engagement to others. Therefore, fostering work engagement is an important asset not only for teachers but also for schools, especially for early career teachers who are making the transition from teacher education to teaching work. This study explores the early career teachers' work engagement and its associations with their professional agency in the classroom and class teacher experience. A total of 779 Chinese early career teachers, including primary and junior secondary school teachers, completed the questionnaire, and the data were analyzed by using structural equation modelling (SEM). The results showed that

early career teachers' professional agency in the classroom contributes to their work engagement. The findings also revealed that class teacher experience was related to their work engagement.

The effect of numeric feedback on coaching conversations and teacher skill development

Keywords: Experimental studies, In-service teacher education, Teacher education, Teacher professional development

Presenting Author:John Papay, Brown University, United States; **Co-Author:**Julie Cohen, University of Virginia, United States

For decades, American teacher evaluation systems have used instructional rubrics to assess teachers' skills. Practitioners would benefit from empirical clarity around how scores impact teacher skill development. This study examines the causal effect of providing new teachers with numeric performance metrics in coaching conversations, compared to holistic coaching without scores. In spring 2025, we conducted a field experiment with 289 teachers and 11 coaches in a single Teach For America (TFA) region and are currently scaling the experiment across the TFA enterprise. We randomly assigned half the coaches to provide numeric feedback (scores from the CLASS observation tool), while the other half provided only narrative feedback. Teachers in the numeric condition were significantly more likely to find their feedback useful for their development and to recommend them. Coaches were also more positive about the numeric reports. We can report on the larger-scale experiment and impacts on instructional practice by June.

Identifying topical needs for and designing leadership education for teachers and principals

Keywords: In-service teacher education, Professional development interventions, Teacher education, Teacher professional development

Presenting Author:Janni Alho, University of Jyväskylä, Finland; **Co-Author:**Elina Fonsén, University of Jyväskylä, Finland; **Co-Author:**Eija Hanhimäki, University of Jyväskylä, Finland

Today, schools' operational environments change rapidly and school leadership should deal with that successfully. This is why there is a topical need for building an understanding of what competencies are required from this day's educational leaders, what the related competency development needs are and how leadership development can be supported effectively. The present study, conducted as a part of the EDUCA Flagship (2024-2028), examines these aspects. Specifically, this study examines teachers' and principals' perceptions of three in-service trainings (5-25 ECTS credits) in educational leadership, and their perceptions of their own leadership competencies/development needs. The data was collected with semi-structured individual interviews (n = 40) and will be analysed with qualitative content analysis. The results will be applied in designing innovative research-based leadership education for teachers and (future) principals, including improving the continuum of pre- and in-service teacher education as a relevant leadership development context for (future) professionals in education.

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Porthania P668

Single Paper

Higher Education, Teaching and Teacher Education

Single Paper paper_type_1 session 37

Keywords: Adaptive expertise, Collaborative learning, Educational technology, Interdisciplinary, Learning approaches, Metacognition, Multicultural education, Problem solving, Reflection, Student learning, Teacher educator professional development

Interest group: SIG 04 - Higher Education, SIG 11 - Teaching and Teacher Education

Chairperson: Anne Haarala-Muhonen, University of Helsinki, Finland

The Reflective Architecture of Simulation: How Modalities Shape Reflective Learning

Keywords: Educational technology, Metacognition, Reflection, Teacher educator professional development

Presenting Author:Orna Levin, Achva Academic College, Israel; **Co-Author:**Heidi Flavian, Achva Academic College, Israel

Although simulation-based learning (SBL) is increasingly implemented in teacher education, little is known about how different simulation modalities mediate reflective learning. This study examined how human-based and computer-based simulations activate reflection through distinct mediational features. Drawing on Vygotsky's sociocultural theory and Schön's concept of reflection-in- and on-action, SBL is conceptualized as a pedagogical design for mediated reflection. Ninety-four first-year in-service teachers participated in both modalities within a national induction program. Data from 94 written reflections, six video-recorded debriefings, and a group interview were thematically analyzed. Findings identified four mediational features: emotional safety, response time, authenticity, and reflection form. These features operated differently across modalities, shaping diverse patterns of engagement, risk-safety balance, and metacognitive development. The study proposes an integrative model of mediated reflection, positioning SBL as an innovative reflective pedagogy that transforms experience into professional understanding.

Designing for Reflection: Metacognitive Activation in Teacher Education Simulations

Keywords: Adaptive expertise, Metacognition, Multicultural education, Reflection

Presenting Author:Orna Levin, Achva Academic College, Israel; **Co-Author:**MARÍA LAURA ANGELINI, UNIVERSIDAD CATÓLICA DE VALENCIA, Spain

Simulation-based learning (SBL) offers teacher education an innovative pedagogical space connecting theory, practice, and reflection. It is credited with cultivating adaptive expertise; however, the intersection between adaptive expertise and metacognitive activation, understood as the reflective processes that enable flexible adaptation, remains underspecified. This multiple-case study examined two human-based models—clinical simulations with professional actors (Israel) and sustained virtual role-play (Spain)—across 2023–2025 to identify how metacognitive knowledge, monitoring, and regulation are elicited across the learning phases. Participants were 601 preservice teachers; data comprised post-workshop reflections, eight purposively sampled video recordings, and 209 field-journal entries. A thematic analysis mapped evidence across cases, supported by triangulation and cross-case matrices for credibility. Findings reveal phase-process mechanisms through which SBL promotes reflective reasoning and adaptive expertise. The study contributes an analytic understanding of metacognitively generative SBL and a design-phase-process map linking innovation and reflection in diverse teacher-education contexts.

Reflective Practice Among First-Year Students: Reflecting on Action for Study Skills Development

Keywords: Learning approaches, Metacognition, Reflection, Student learning

Presenting Author:Anne Haarala-Muhonen, University of Helsinki, Finland; **Co-Author:**Anna Parpala, University of Helsinki, Finland

This study examines the experiences of first-year law students through feedback from a survey assessing their learning processes. Initially, students evaluated their study skills and received feedback, which encouraged them to develop concrete improvement plans. Six months later, 79 students completed the survey again, reflecting on the implementation of their plans. Qualitative content analysis of their open-ended responses revealed that most students successfully implemented their plans, indicating active reflection and necessary adjustments. However, some students encountered obstacles in executing their plans, suggesting that their metacognitive awareness or reflective practice may not have developed sufficiently. These findings highlight the importance of feedback in fostering metacognitive awareness and the need for guidance in reflection to enhance study habits and learning experiences. Understanding the barriers to plan implementation provides valuable insights for better supporting students' learning in the future.

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Porthania P723

Single Paper
Higher Education, Teaching and Teacher Education

Single Paper paper_type_1 session 33

Keywords: Digital transformation, Higher education, History, Knowledge creation, Pre-service teacher education, Teacher, Teacher education, Vocational education

Interest group: SIG 11 - Teaching and Teacher Education

Chairperson: Janne Sääntti, University of Helsinki, Finland

Bridging Academic and Vocational Knowledge: Professionalization in Vocational Teacher Education

Keywords: Digital transformation, Higher education, Teacher education, Vocational education

Presenting Author: Niklas Sängler, Paderborn University, Germany; **Presenting Author:** Tobias Jenert, Paderborn University, Germany

This study examines how vocational teacher programs foster the integration of academic and vocational knowledge and how prior work-related experiences contribute to teacher professionalization. Since VET curricula in Germany are organized around professional fields of action rather than disciplinary canons (Sloane, 2014), bridging both forms of knowledge is essential for teacher development. Using a validated TPACK-based instrument (Author, 2024; Koehler et al., 2013), we analyzed self-assessments from 206 students at six universities (112 bachelor's; 94 master's). Multivariate analyses (MANOVAs) show that master's students report higher disciplinary, pedagogical, and integrative knowledge, while vocational knowledge remains stable across study stages. Prior vocational or work experience (e.g., training or employment) is associated with higher vocational content knowledge but not with higher integrative TPACK. These findings suggest complementary effects of academic progression and vocational experience and highlight implications for designing higher education programs that deliberately integrate both forms of knowledge.

Social identification of teachers in preparatory service at vocational schools

Keywords: Pre-service teacher education, Teacher, Teacher education, Vocational education

Presenting Author: Jule Hangen, Goethe University Frankfurt, Germany

The German preparatory service is considered to be stressful. The preparatory service is the first phase of practical teaching work, lays the foundations for a later professional career and is essential for the development of a professional identity. The study focuses on different foci of social identification (e.g. school, study seminar, team) during the preparatory service, changes in identification and the relationship to stress and well-being.

A quantitative questionnaire study was conducted in a longitudinal design (5 measurement points over 21 months). Participants (N=34) identified with all foci in medium to high range, but these did not differ significantly from each other. There were also no significant changes in identification with the foci over time. The relationship between identification with a school team and perceived stress is fully mediated by school support. High identifier show higher job satisfaction and lower level of stress than low identifier.

From Critical Incidents to Reflective Learning: Communicative Competence in Vocational Training

Keywords: Higher education, Pre-service teacher education, Teacher education, Vocational education

Presenting Author: Lara Wahrhausen, Universität Potsdam, Germany

Communicative competence is a key component of learners' vocational competence. To promote this competence effectively, teachers themselves need well-developed communicative and diagnostic skills. In this context, the concept of *critical incidents* is introduced – short, interactionally dense episodes where communicative breakdowns or learning opportunities become visible in order to initiate the analysis of communicative competence and derivation of intervention measures. Based on a systematic synthesis of 26 empirical studies (2006–2025), recurrent types of critical incidents were identified. Each type is described through its discursive indicators, pedagogical risks, and intervention potential. The typology provides a framework for analyzing communication and a didactic tool for supporting teachers' professional vision and adaptive expertise. In teacher education for vocational education and training, these incidents can serve as anchors for reflection and discussion, helping future teachers recognize and respond to interactional challenges.

Competence Discourse in Finnish Teacher Education: Critiques and Emerging Tensions

Keywords: Higher education, History, Knowledge creation, Teacher education

Presenting Author: Johanna Annala, University of Jyväskylä Finland, Janne Sääntti, University of Helsinki, Finland; **Co-Author:** Mikko Puustinen, University of Helsinki, Finland; **Co-Author:** Jyri Lindén, University of Tampere, Finland

In our theoretical paper, we examine the institutionalization of competence discourse as part of education and how it is represented in Finnish teacher education. The meaning of competence is not entirely straightforward, but a central feature of descriptions of competence is the emphasis on practical skills at the expense of knowledge and knowing. We begin by exploring the history of competence-related discourse and the challenges it has sought to address, while also introducing recent perspectives on competence discourse linked to education policy. We then review the criticism directed at competence discourse, after which we focus on the higher education context. Finally, we discuss competence discourse specifically in relation to Finnish academic teacher education. We argue that having consistently built on academic, research-based, and educational foundations, teacher education has gradually shifted toward emphasising competence as a starting point for its own practices as well as for the teaching profession.

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Language Center 203
Single Paper
Higher Education, Teaching and Teacher Education

Single Paper paper_type_1 session 1

Keywords: Communities of practice, Content analysis, Conversation/discourse analysis, Goal Orientation, Motivation and emotion, Pre-service teacher education, Professions and applied sciences, Qualitative methods, Self-efficacy, Teacher, Teacher education, Teacher professional development

Interest group: SIG 04 - Higher Education, SIG 11 - Teaching and Teacher Education

Chairperson: Päivi Kinnunen, University of Helsinki, Finland

"One Emotion You Felt There": Teacher Emotional Discourse in Professional Development

Keywords: Communities of practice, Conversation/discourse analysis, Motivation and emotion, Teacher professional development

Presenting Author: Dana Vedder-Weiss, Ben-Gurion University of the Negev, Israel; **Presenting Author:** Karin Sarfati Shaulov, Ben Gurion University of the Negev, Israel

While social-emotional learning (SEL) emphasizes students' emotional competencies, teachers' own abilities to identify and articulate emotions remain underexplored. This study examined teachers' emotional discourse in professional development (PD) designed to enhance emotional competencies around teacher-parent relationships. We analyzed video-recorded responses from 24 teachers (elementary and high school) following clinical simulations with a trained actor. Despite intentional preparation in emotion labelling and direct prompting ("Share one emotion you felt there"), only seven teachers spontaneously labelled their emotions. Others required multiple facilitator prompts, expressed empathy for parents rather than personal feelings, described parental behaviors, or discussed their own actions instead of emotions. Grounded in communities of practice theory, findings suggest teachers struggle to engage in emotional discourse even within supportive PD contexts, potentially hindering their capacity to model SEL for students. Results highlight the need for explicit, sustained opportunities for teachers to practice emotional competencies themselves before effectively implementing SEL curricula.

Changes in Student Teachers' Self-Efficacy and Motivational Factors During the Teaching Practice

Keywords: Goal Orientation, Motivation and emotion, Pre-service teacher education, Self-efficacy

Presenting Author: Katrin Poom-Valickis, Tallinn University, Estonia; **Presenting Author:** Maile Käsper, Tallinn University, School of Educational Sciences, Estonia

This study investigates changes in student teachers' self-efficacy during practice and its associations with achievement goal orientations and socio-emotional competencies (emotion regulation, coping, and perceived coping with learning). A total of 118 student teachers from Tallinn University participated and completed pre- and post-practice questionnaires. Teacher self-efficacy increased significantly from pre- to post-practice ($M_{pre} = 4.43$, $SD_{pre} = 0.68 \rightarrow M_{post} = 4.61$, $SD_{post} = 0.66$; $p < .001$, $d = .39$), while external locus of control remained unchanged ($p = .897$). The perceived importance of performance-oriented goals decreased ($p < .05$), whereas mastery goals remained high and stable. Post-practice, higher self-efficacy was positively related to stronger

emotion regulation ($r = .51$), more effective coping ($r = .51$), and greater mastery orientation ($r = .52$). The findings suggest that motivational and socio-emotional resources may play an important role in developing teacher self-efficacy, underlining the relevance of addressing these aspects in teacher education.

Going through emotions – to show or not to show your emotions when teaching

Keywords: Content analysis, Motivation and emotion, Qualitative methods, Teacher

Presenting Author:Päivi Kinnunen, University of Helsinki, Finland; **Co-Author:**Virginia Grande, Uppsala University, Sweden; **Co-Author:**Mihaela Sabin, University of New Hampshire, United States; **Co-Author:**Matthew Barr, University of Glasgow, United Kingdom; **Co-Author:**Anne-Kathrin Peters, The Royal Institute of Technology (KTH), Sweden; **Co-Author:**Matilde Sanchez-Pena, University at Buffalo, United States

This qualitative study investigates the situations and consequences of emotional labour experienced by educators in higher education. Our research questions are: 1) In what kind of teaching related situations and contexts do educators experience emotional labour? 2) What are the perceived consequences of emotional labour for the teachers?

An abductive content analysis of 22 semi-structured interviews with computing educators across seven countries and four continents revealed that educators often conceal or fabricate emotions to meet institutional expectations, leading to significant emotional labour. The findings highlight various situational factors and hierarchical norms that influence emotional expression, underscoring the tension between the perceived unemotional nature of technical subjects and the genuine emotions educators experience. Understanding these dynamics is crucial for addressing emotional labour and enhancing educator well-being in higher education contexts. This research contributes to the discourse on professional development and emotional preparedness for educators.

Factors promoting occupational wellbeing: teachers' and principals' views

Keywords: Motivation and emotion, Professions and applied sciences, Teacher, Teacher education

Presenting Author:Olli-Pekka Heinimäki, University of Helsinki, Finland; **Co-Author:**Lauri Hietajärvi, University of Helsinki, Finland; **Co-Author:**Katja Upadaya, University of Helsinki, Finland; **Co-Author:**Mailis Elomaa, University of Helsinki, Finland; **Co-Author:**Hiroyuki Toyama, University of Helsinki, Finland; **Co-Author:**Kelly Ferber, University of Helsinki, Finland; **Co-Author:**Minna Huotilainen, University of Helsinki, Finland

Teachers and principals play critical roles in the school ecosystem, yet increasing job demands are placing growing pressure on their wellbeing. This study explores the factors that these professionals themselves identify as most positively influencing their occupational wellbeing. Drawing on two national datasets collected in spring 2025 from over 1200 teachers and 300 principals in Finland, participants responded to an open-ended question about what had most supported their wellbeing at work. Using Structural Topic Modeling, several key themes emerged in the preliminary findings, including supportive work communities, work-life balance, student success, and physical activity. The findings offer data-driven insights into wellbeing resources valued by educators, many of which align with the Job Demands-Resources framework. These results can inform both future support efforts and the design of wellbeing surveys targeting school staff.

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Main Building U4080

Single Paper

Assessment and Evaluation, Teaching and Teacher Education

Single Paper paper_type_1 session 40

Keywords: Achievement, Comparative studies, Competence development, Computer-assisted learning, Literacy, Meta-analysis, Out-of-school learning, Student learning, Teacher educator professional development, Teacher effectiveness, Teaching/instruction

Interest group: SIG 11 - Teaching and Teacher Education

Chairperson: Cécile Vassaux, UNIGE, Switzerland

Which Teacher Characteristics Matter? A Meta-Analysis of Longitudinal Evidence

Keywords: Meta-analysis, Student learning, Teacher effectiveness, Teaching/instruction

Presenting Author:Nikolaus Bönke, University of Freiburg, Germany; **Co-Author:**Gyde Wartenberg, Humboldt-University Berlin, Educational Research and Educational Psychology, Germany; **Co-Author:**Uta Klusmann, Humboldt-University Berlin, Germany; **Co-Author:**Thamar Voss, University of Freiburg, Germany

To identify key teacher characteristics linked to changes in instructional quality and student learning, this meta-analysis draws solely on longitudinal studies. A systematic literature search identified 225 peer-reviewed studies employing longitudinal designs with primary and secondary school teachers. Both generic (e.g., personality, intelligence) and profession-specific (e.g., professional knowledge, beliefs, motivation, self-regulation) teacher characteristics were measured with standardized instruments. To avoid common method bias, only studies using student- or observer-based measures of instructional quality and student learning were included. Longitudinal correlations were used to investigate (1) the relationship between teacher characteristics, instructional quality, and student learning, (2) differences between generic versus profession-specific predictors, and (3) sources of heterogeneity across studies. Preliminary findings suggest that both types of characteristics are relevant, but research predominantly focuses on profession-specific characteristics. The results aim to provide evidence-informed guidance for teacher education and policy by identifying which teacher characteristics consistently predict high-quality instruction and student learning.

Unpacking the Individualized Nature of Transfer of Training Among In-Service Teachers

Keywords: Competence development, In-service teacher education, Teacher professional development, Workplace learning

Presenting Author:Bastian de Jong, University of Amsterdam, Netherlands

Despite the importance for in-service teachers to engage in career-related training, transfer of training is often low. To investigate predictors of transfer and how it can be raised, research often employ static designs that do not capture the dynamic nature of transfer. In this conceptual paper, a different approach towards investigating transfer and its predictors is proposed based on the Dynamic Transfer Model. According to this model, transfer varies over time and is influenced by personal and contextual predictors at varying rates. In addition, the Learning Path framework is integrated in this model based on which learning motives provide more in-depth explanations for individual differences in amount and kind of transfer of training between in-service teachers. This dynamic approach towards transfer implicates that research should apply time-intensive designs combined with qualitative research. For practitioners, more 'just in time' support is required towards in-service teachers to enable transfer.

Role models in teachers' in-service professional learning: validating the status-attitude framework

Keywords: In-service teacher education, Informal learning, Teacher professional development, Workplace learning

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

This study validates and refines the *status-attitude framework* of role models within the context of teachers' in-service informal professional learning. Building on recent theoretical work distinguishing *role model status* and *role model attitude* as distinct yet interacting dimensions, this study explores how role models manifest within the daily realities of teachers in regard to in-service informal professional learning. Using participatory mapping and ego-network interviews ($n=50$), we validated and refined the *status-attitude framework* in an educational context. Preliminary findings show that teachers attribute role model attitude to colleagues who combine perceived high professional standards and expertise with relational warmth, empathy, and a balanced approach to work and life. Role modelling emerges as a relational, reciprocal process embedded in daily collaboration rather than formal mentorship. The study contributes to teacher education research by clarifying how social, affective, and behavioural dimensions jointly shape in-service informal professional learning.

Teaching practices and academic success in higher education: a multilevel analysis

Keywords: Achievement, Student-teacher interactions, Teacher effectiveness, Teaching innovation or innovative teaching practices

Presenting Author:Mikaël De Clercq, Université catholique de Louvain (UCL); Académie de Recherche et de l'Enseignement Supérieur (ARES), Belgium; **Co-Author:**Amélie Duguet, Université de Bourgogne Europe, France

Improving teaching practices (TPs) has become an ongoing concern in Higher Education. Yet, despite a vast body of research on individual factors, the specific role of TPs on academic achievement is still understudied. More precisely, it is unclear today to what extent TPs are important correlates of academic achievement when the role of individual variables are considered. In order to overcome those limitations, this paper analyses, through multilevel analysis, the role cumulative role of background characteristics, student engagement, course characteristics and TPs on academic achievement. Data were carried out 884 bachelor students from 20 different lectures. Results demonstrate that TPs focusing on instructional support were significantly linked with student's achievement beyond the significant impact of past performance and behavioral engagement. The presentation will discuss the practical implications of those results to depict a more global picture of achievement process in higher education.

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Chairperson: Stefan T. Siegel, University of St.Gallen, Switzerland

Teaching approaches at the University of Trento: What approaches do lecturers adopt?

Keywords: Higher education, Mixed methods, Teacher professional development, Teaching approaches

Presenting Author: Daniele Agostini, University of Trento (I), Italy; **Co-Author:** Elena Benini, University of Trento (I), Italy; **Co-Author:** Ligia Tomazin, University of Trento (I), Italy; **Co-Author:** Paola Venuti, University of Trento (I), Italy; **Co-Author:** Anna Serbati, University of Trento (I), Italy

In recent decades, university teaching has evolved from transmissive models to student-centred ones. This study analyses the teaching approaches of academics at the University of Trento in Italy using the HEAT questionnaire (Postareff et al., 2024), which distinguishes four approaches (interactive, non-reflective, transmissive, organised) and measures self-efficacy. The questionnaire was administered to n=848 members of the teaching staff and the results were cross-referenced with participation in academic development activities offered by the Teaching and Learning Centre. Our findings provide insights into teaching practices and guide training interventions aimed at improving the quality of academic teaching. The study aims to contribute to the design of personalised training courses and the promotion of teaching quality as a strategic driver for institutional innovation.

Burnout profiles and psychological flexibility in an ACT-based online course for university staff

Keywords: Higher education, Interdisciplinary, Mixed methods, Online learning

Presenting Author: Veera Lampinen, University of Helsinki, Finland; **Co-Author:** Nina Katajavuori, University of Helsinki, Finland; **Co-Author:** Viktoria Balla, University of Helsinki, Finland; **Co-Author:** Ella Kämper, University of Helsinki, Finland; **Co-Author:** Henna Asikainen, University of Helsinki, Finland

Academic university staff operate in increasingly demanding higher education contexts characterized by high workloads, job insecurity, and growing emotional labor, placing them at elevated risk for burnout and psychological distress. Despite the expanding use of digital well-being interventions, evidence for online Acceptance and Commitment Therapy (ACT)-based interventions specifically targeting university staff remains largely non-existent. This mixed-methods study examines university staff participation in an online ACT-based workplace well-being and working life skills course (N = 265). Preliminary findings using a person-oriented latent profile analysis identified four distinct pre-intervention burnout profiles and substantial overall attrition, with the most severely burnt-out profile showing the highest dropout. Mixed-methods analysis using Q-methodology is utilized to explore how participants from different burnout profiles subjectively experience and prioritize psychological flexibility processes following the intervention. By integrating person-oriented outcome modelling with process-level subjective analysis, the study offers a multi-level understanding of staff well-being support in higher education.

USING DESIGN-BASED RESEARCH TO INNOVATE IN BUSINESS EDUCATION

Keywords: Design based research, Higher education, Learning approaches, Mixed methods

Presenting Author: Ellinor Allen, Monash University, Australia; **Co-Author:** Colin Jevons, Monash University, Australia

The accounting profession is in crisis due to graduates lacking critical thinking skills, highlighting outdated pedagogies in university business education. Critical thinking is broad and complex, ill-defined, difficult to measure and inextricably linked to learning. In such a 'messy' context, a Design-Based Research (DBR) approach offers an opportunity to understand the complexity of the situation and identify factors contributing to the skills shortage problem. Literature around critical thinking, critical thinking skills development, and student approaches to learning guided the design of a pedagogical intervention aimed at fostering critical thinking skills development. The progressive findings of two iterations of the intervention are discussed, along with learnings that prompted changes to the intervention design consistent with DBR principles. The iterative nature of this methodology was new to accounting education research, but findings were rich and insightful, directing attention to issues at the introductory accounting level that warrant further investigation.

IS A LACK OF PRIOR KNOWLEDGE HAMPERING CRITICAL THINKING SKILLS DEVELOPMENT IN ACCOUNTING STUDENTS?

Keywords: Critical thinking, Higher education, Mixed methods, Teaching innovation or innovative teaching practices

Presenting Author: Colin Jevons, Monash University, Australia; **Co-Author:** Ellinor Allen, Monash University, Australia

The importance of critical thinking is undeniable, especially in the age of AI and in an accounting profession undergoing rapid technology-driven transformation. Accounting education is failing to maintain relevance and alignment with graduate and employer needs in this context. Critical thinking is an often-cited graduate attribute, but is complex and difficult to measure. Many inventories of skills and dispositions rely on implicit assumptions about the need for prior knowledge to facilitate critical thought. This notion is investigated in a university accounting setting. The study involved a two-part weekly intervention as part of intermediate-level accounting students' assessment, requiring them to integrate introductory accounting knowledge from earlier study with their new learning. Key factors for those students who performed this poorly were a failure to remember prior accounting content and perceived irrelevance. We make suggestions for future research and teaching practice.

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Porthania P617

Single Paper

Teaching and Teacher Education

Single Paper paper_type_1 session 13

Keywords: At-risk students, Beginning teachers, Pre-service teacher education, Quantitative methods, Teacher education, Teacher professional development

Interest group: SIG 11 - Teaching and Teacher Education

Chairperson: Jenni Sullanmaa, University of Helsinki, Finland

Preservice Teacher Identity in European Teacher Education: A Systematic Review from 2014 to 2024

Keywords: Beginning teachers, Pre-service teacher education, Teacher education, Teacher professional development

Presenting Author: Çağıl Çetinkaya, University of Jyväskylä, Finland; **Co-Author:** Sotiria Varis, University of Jyväskylä, Finland

This presentation presents a systematic review of preservice teachers' teacher identity (TI). It focuses on empirical research published in English between 2014 and 2024 concerning university-based initial teacher education (ITE) in the European Higher Education Area. The review aims to provide an updated overview of the theoretical foundations informing empirical research and to identify empirical insights into preservice teachers' TI development. The search employed two search strings across four databases, yielding 39 studies that met predetermined inclusion criteria. The thematically analyzed studies demonstrated varied theoretical foundations but also support for a shared understanding of preservice teachers' TI involving individual, pedagogical, and social aspects. They further highlighted three research areas in preservice teachers' TI development: beliefs and perceptions, tensions, and supplementary interventions in teacher education. This review advocates for clear terminology and a deeper understanding of preservice teachers' TI development processes to better support preservice teachers' TI.

"I'm going to quit this shit" – dilemmas in professionalisation processes of early career teachers

Keywords: Beginning teachers, Pre-service teacher education, Teacher education, Teacher professional development

Presenting Author: Vanessa Pieper, University of Wuppertal, Germany; **Co-Author:** Rosi Ritter, Bergische Universität Wuppertal, Germany; **Co-Author:** Anna-Lena Molitor, University of Wuppertal, Germany; **Co-Author:** Michael Rochnia, University of Wuppertal, Germany; **Co-Author:** Judith Schellenbach-Zell, University of Wuppertal, Germany

Professionalisation processes of early career teachers have not been much subject of empirical interest, very few studies investigate the professional development or its discontinuation in this phase (Schmid-Kühn & Fuchs, 2024). However, this phase is particularly crucial as here developmental tasks, e.g. dealing with dilemmas within the so-called activity system (Caspari-Gnann & Sevan, 2022), have to be accomplished. Developing suitable strategies to deal with these dilemmas promotes professionalisation, or, if unsuccessful, may lead to leaving it.

In order to investigate the role of dilemmas and respective coping strategies in the decisions of teachers to (dis)continue their professionalization, we conducted prompted narrative interviews with 10 (former) teachers.

Preliminary results point to complex dilemma-strategy patterns that either drive or terminate professionalization. Next to various dilemmas and strategies, interviewees attribute a great importance to (bad) luck in their professionalization process, which means that remaining in the profession also depends on circumstances beyond control.

Non-cognitive skills as early predictors of completion in initial teacher training

Keywords: At-risk students, Pre-service teacher education, Teacher education, Teacher professional development

Presenting Author: Sandra Dietrich, University of Leipzig, Germany; **Co-Author:** Kristofer Jachnow, Leipzig University, Germany; **Co-Author:** Brigitte Latzko, Leipzig University, Germany

Drawing on the COACTIV model (Baumert & Kunter, 2011), this paper investigates how motivational and self-regulatory facets of teacher competence relate to

academic success during initial academic teacher training. Survey data from 352 student teachers collected early and midway in their studies and administrative data covering their entire academic progress served as the empirical basis. Adopting a person-centred approach, four distinct student groups with typical patterns of motivation, volition, and personality were identified. The groups we found differed in their respective levels of academic success and well-being. Students in groups with distinctly extrinsic motives were less likely to complete their programmes and were generally less satisfied with their lives. Implications for ensuring academic success in teacher training are discussed.

Understanding Preservice Teachers' Futures Consciousness: Development and Validation of the TFC Scale

Keywords: Pre-service teacher education, Quantitative methods, Teacher education, Teacher professional development

Presenting Author: Xinlan Zhang, University of Helsinki, Finland

Teachers play a vital role in the future of education and should be encouraged to act as agents of change rather than societal adapters. Equipping them with future-oriented mindsets is essential. This study analyzes 342 pre-service teachers' futures consciousness regarding their teaching profession through five dimensions: 1) Time perspective, 2) Agency beliefs, 3) Openness to alternatives, 4) Systems perception and 5) Concern for others, by introducing and testing a newly developed Teachers' Futures Consciousness scale (TFC), through exploratory factor analysis, T-test, and confirmatory factor analysis. The results showed that the newly developed TFC questionnaire was tested valid, and the five TFC dimensions were observed different manifestations in pre-service teachers' futures consciousness. This empirical study aims to explore teachers' futures consciousness by developing and validating a measurement tool, uncovering the characteristics and differences of future consciousness among pre-service teachers. The findings also aim to provide insights into necessary changes in teacher education for more sustainable futures. Data analysis is currently in progress, and preliminary findings will be presented at the conference. **Key words:** Futures Consciousness, Teachers' Futures Consciousness scale, Pre-service teachers, Quantitative

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Language Center 206

Symposium

Higher Education, Teaching and Teacher Education

Cross-Cultural Studies in Higher Education and Teacher Education

Keywords: AI in higher education, Assessment methods and tools, Comparative studies, Competence development, Higher education, Pre-service teacher education, Self-efficacy, Survey research, Teacher education, Teaching approaches

Interest group: SIG 04 - Higher Education, SIG 11 - Teaching and Teacher Education

Chairperson: Julia Mendzheritskaya, Goethe-Universität Frankfurt, Germany

Organiser: Miriam Hansen, Goethe-Universität Frankfurt, Germany

Discussant: Jan Vermunt, Cyprus

This symposium brings together three empirical contributions examining cultural influences on learning and teaching within higher education context with a special focus on different students and university instructors groups including teacher education track. The first paper examines higher education teachers, comparing teaching approaches among university instructors from seven countries while controlling for cultural response tendencies. The second paper addresses pre-service teachers, investigating learning orientations and self-efficacy profiles in German and Slovenian teacher education programs. The third paper focuses on higher education students and explores cross-cultural measurement invariance of the Meta AI Literacy Scale across German, Romanian, and Italian samples. Together, these studies offer complementary perspectives on how cultural contexts shape educational beliefs, practices, and measurement validity across different groups within higher education. The symposium will highlight theoretical, methodological, and practical insights for advancing (cross-cultural) research in higher education and teacher education.

Cross-Cultural Comparison of Higher Education Teachers' Approaches to Teaching

Presenting Author: Miriam Hansen, Goethe-Universität Frankfurt, Germany; **Co-Author:** Daniele Agostini, University of Trento (I), Italy; **Co-Author:** Irene Corvacho del Toro, University of Siegen, Germany; **Co-Author:** Ida Dringo-Horvath, Karoli Gaspar University of the Reformed Church in Hungary, Hungary; **Co-Author:** Marian Ilie, West University of Timisoara, Romania; **Co-Author:** Julia Mendzheritskaya, Goethe-Universität Frankfurt, Germany; **Co-Author:** Velibor Mladenovici, West University of Timisoara, Romania; **Co-Author:** Anna Parpala, University of Helsinki, Finland; **Co-Author:** Liisa Postareff, HAMK University of Applied Sciences, Finland; **Co-Author:** Uwe Richter, ARU Cambridge, United Kingdom; **Co-Author:** Anna Serbati, University of Trento (I), Italy; **Co-Author:** Ligia Tomazin, University of Trento (I), Italy

This study examined cross-national differences in university teachers' approaches to teaching using the HEAT questionnaire, which conceptualizes teaching along four dimensions: interactive, unreflective, transmissive, and organized approaches. Data from 1,346 teachers in seven countries (Germany, Colombia, the United Kingdom, Italy, Romania, Finland, and Hungary) were analyzed. To account for cultural differences in rating behavior, four response tendencies—acquiescence (ARS), disacquiescence (DRS), midpoint (MRS), and extreme responding (ERS)—were statistically controlled. A MANCOVA revealed a significant main effect of country. Across countries, the Organized approach showed the highest adjusted means, whereas the Unreflective approach yielded the lowest. Colombia and Romania reported the highest scores on Interactive and Transmissive approaches, while Finland scored lowest on both. These findings highlight consistent cross-national differences in teaching orientations and emphasize the importance of accounting for response tendencies in cross-cultural educational research.

Pre-Service Teachers' Orientations to Learning to Teach and Self-Efficacy in Germany and Slovenia

Presenting Author: Ann-Kathrin Quarda, Friedrich-Alexander-Universität Erlangen-Nürnberg (FAU), Germany; **Presenting Author:** Lisa Pösse, Justus Liebig University Giessen, Germany; **Co-Author:** Florian Hofmann, Friedrich-Alexander-Universität Erlangen-Nürnberg (FAU), Germany; **Co-Author:** Berit Breins, Friedrich-Alexander-Universität Erlangen-Nürnberg (FAU), Germany; **Co-Author:** Michaela Gläser-Zikuda, University of Erlangen-Nürnberg, Institute for Educational Science, Germany

Internships are recognized as important learning opportunities in teacher education. However, their use depends on characteristics of the offers (e.g., shaped by national curricula) and pre-service teachers' characteristics (Hascher & Kittinger, 2014), including learning orientations (Oosterheert et al., 2002). The study, therefore, examines learning orientations of German and Slovenian pre-service teachers and their relationship to self-efficacy. A questionnaire assessed self-efficacy (regarding teaching, diagnostics, and classroom management) and engagement in four learning activities: linking theory and practice, using mentors, developing ideas through discussion, and pupil-oriented evaluation. Assuming that patterns of these activities reflect learning orientations (Birenbaum & Rosenau, 2006), latent profile analyses were conducted in both samples, revealing two profiles in each: Profile 1 involved engagement in all activities; Profile 2 relied on mentor support and pupil-oriented evaluation. Profile 1 reported descriptively higher self-efficacy across all dimensions; statistically significant differences emerged only in the Slovenian sample for diagnostics and classroom management.

AI Literacy Across Cultures: Testing the Short Version of the Meta AI Literacy Scale (MAILS-S)

Presenting Author: Maria Zirenko, Goethe-University Frankfurt, Institute of Psychology, Germany; **Co-Author:** Sabine Fabriz, Goethe-Universität Frankfurt, Germany; **Co-Author:** Daniele Agostini, University of Trento (I), Italy; **Co-Author:** Mariana Crasovan, West University of Timisoara, Romania; **Co-Author:** Miriam Hansen, Goethe-Universität Frankfurt, Germany; **Co-Author:** Velibor Mladenovici, West University of Timisoara, Romania; **Co-Author:** Anna Serbati, University of Trento (I), Italy; **Co-Author:** Ligia Tomazin, University of Trento (I), Italy; **Co-Author:** Sittipan Yotyodying, Goethe University Frankfurt; Institute of Psychology, Germany

The increasing relevance of artificial intelligence (AI) in education and society highlights the need for valid instruments to assess AI literacy across cultural contexts. This study investigates the psychometric properties and cross-cultural measurement invariance of the short version of the Meta AI Literacy Scale. The comparison includes a German (n = 253) and a Romanian sample (n = 583) and will be supplemented by an Italian sample by the time of the presentation. Using a cross-sectional design, we examined the factorial validity, internal consistency, and metric invariance of the instrument across the three national samples. Preliminary analyses of the German and Romanian cohorts revealed that not all scales were non-invariant across the two countries, suggesting that individuals from Germany and Romania likely have different perceptions of the items. The results will be updated and discussed in light of the inclusion of the third cohort and the final German sample.

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Language Center 204

Symposium

Teaching and Teacher Education

Coherences within and differences between Initial Teacher Education (ITE) programmes

Keywords: Pre-service teacher education, Teacher, Teacher education, Teacher educator, Teacher educator professional development

Interest group: SIG 11 - Teaching and Teacher Education

Chairperson: Ruben Vanderlinde, Ghent University, Belgium

Organiser: Hannah Bijlsma, Radboud University, Netherlands

Discussant: Esther Canrinus, University of Agder, Norway

Across Europe, Initial Teacher Education (ITE) programmes face growing expectations to prepare future teachers. Yet, curricula differ substantially across countries and institutions. This symposium presents three complementary studies examining curriculum coherence and differences from structural, social, and systemic perspectives. The first study analyses Icelandic ITE through surveys and interviews, revealing a shared pedagogical vision but weak coordination and limited alignment between theory and practice. The second study, situated in Flanders (Belgium), shows that teacher educators' professional networks foster curriculum coherence: those more embedded in collegial discussions align better with programme goals and field experiences. The third study maps Dutch full-time primary ITE curricula, showing wide variation in content, assessment, and translation of national standards, creating uncertainty about novices' preparedness. By highlighting different national contexts and underlying methodologies, this symposium opens the conversation about how ITE curricula can become more aligned and transparent to better prepare future teachers.

Coherence in Teacher Education: Insights from Student Teachers and Teacher Educators in Iceland

Presenting Author: Berglind Gísladóttir, University of Iceland School of Education, Iceland

This paper explores perceived coherence in Icelandic teacher education from the perspectives of student teachers and teacher educators. Drawing on data from the Monitoring and Improving Teacher Education (MITE) project, the study integrates survey responses from 276 master's-level student teachers at the University of Iceland and the University of Akureyri with interview data from programme leaders and selected faculty. Preliminary analyses indicate that while most student teachers perceive their programmes as guided by a clear vision of teaching and learning, they also report limited coordination among courses and instructors. Likewise, teacher educators describe a strong individual commitment to connecting theory and practice but limited oversight of the programme as a whole. Together, the findings point to the need for stronger organisational structures, sustained professional dialogue, and practice-based learning opportunities to connect coursework, field experiences, and pedagogy into a coherent professional learning experience.

The networked teacher educator: ITE curriculum coherence through the lens of social capital theory

Presenting Author: Pieter Flamand, Ghent University, Belgium; **Co-Author:** Thibault Coppe, Université Libre de Bruxelles, Belgium; **Co-Author:** Laura Thomas, Ghent University, Belgium; **Co-Author:** Ruben Vanderlinde, Ghent University, Belgium; **Co-Author:** Melissa Tuytens, Ghent University, Belgium

This study explores how teacher educators' teaching-related discussion contribute to curriculum coherence in initial teacher education. Adopting a social network perspective, it investigates the structural characteristics of teaching networks among 153 teacher educators across five programs in Flanders. Using survey data, the study finds that educators who engage more frequently in teaching-related discussions, occupy more central positions within their networks, and serve as bridges between colleagues, are also more likely to align their teaching practices with the overarching program vision, other courses, and field experiences. These findings underscore the importance of viewing curriculum coherence not merely as a curriculum design feature but as a dynamic, socially embedded process. The study offers implications for teacher education, suggesting that fostering collaborative engagement among teacher educators can enhance coherence and improve the quality of teacher education.

Differences between curricula of ITE-programmes in the Netherlands: A systematic analysis

Presenting Author: Hannah Bijlsma, Radboud University, Netherlands

In the Netherlands, little is known about what pre-service teachers are taught (i.e., the knowledge and skills they master) during their Initial Teacher Education (ITE). This is a problem as the quality of ITE is an important determinant for the quality of their teaching. Due to concerns about the low achievement levels of Dutch students in primary and secondary education, the question can be raised as to what pre-service teachers are taught in their ITE. This study systematically investigated the content, amount of curriculum time devoted to specific courses (in European Credits), assessment methods, and structure of full-time ITE programmes for primary education in the Netherlands. Our results indicate differences between programmes with regard to all four curriculum elements. Moreover, the extent to which and the way in which national teacher standards are translated into curricula vary greatly.

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Porthania P673

Symposium

Teaching and Teacher Education

Beyond Digital Skills: Rethinking Teachers' Pedagogical Digital Competence Development

Keywords: Artificial intelligence, Competence development, Design based research, Digital learning, Educational policy, Learning technologies, Pre-service teacher education, Professional development interventions, Self-efficacy, Self-regulation, Teacher professional development

Interest group: SIG 11 - Teaching and Teacher Education

Chairperson: Kairit Tammets, Tallinn University, Estonia

Organiser: Guy Cohen, Tel Aviv University, Israel

Organiser: Yildiz Isaoglu, Austria

Organiser: Hanna Järvenoja, University of Oulu, Finland

Organiser: Tobias Ley, Austria

Organiser: Tabea Rosenkranz, Ulm University, Germany

Organiser: Tina Seufert, Ulm University, Germany

Organiser: Marlene Wagner, Austria

Organiser: Kateryna Zabolotna, University of Oulu, Finland, Finland

Discussant: Kirsti Lonka, University of Helsinki, Finland

Teachers' pedagogical digital competence (PDC) is often treated as a set of discrete skills to be trained. This symposium argues for a broader framing: PDC develops through complex professional learning processes that intertwine pedagogical, technological, and content knowledge with teachers' self-regulated learning, motivation, and the real requirements and costs that such professional development imposes on everyday work. Across four complementary contributions, we examine how PDC development is shaped across multiple levels—from teachers' self-regulation and self-efficacy beliefs and design practices to professional-learning structures and system-level decision processes. Overall, the symposium advances a perspective in which effective PDC development is not only a question of what teachers learn, but also how, why, and under what conditions teacher training becomes feasible, valuable, and scalable. We conclude by discussing the implications for designing innovative, sustainable, evidence-informed teacher professional learning ecosystems.

Beyond SRL Skills: Self-Efficacy as a Foundation for Pre-Service Teachers' PDC Development

Presenting Author: Kateryna Zabolotna, University of Oulu, Finland, Finland; **Co-Author:** Emma Lehtoaho, University of Oulu, Finland; **Co-Author:** Hanna Järvenoja, University of Oulu, Finland

From a self-regulated learning (SRL) perspective, teachers' pedagogical digital competence (PDC) development is shaped by SRL skills and self-efficacy (SE) beliefs. This study examines how pre-service teachers' SRL skills and SE for implementing SRL and digital teaching relate to PDC development in a compulsory course on technology-enhanced learning. Latent profile analysis identified two SE-SRL profiles that differed substantially in self-efficacy. Although the High SE-SRL group showed slightly higher baseline digital competence, technology adoption, and technology integration intentions, these differences were small. ANCOVA results indicated no profile differences in post-test PDC outcomes or in the development of self-efficacy for SRL implementation or digital teaching once pre-test levels were controlled. Pre-test scores consistently predicted post-test outcomes, suggesting stable initial beliefs and competencies. Overall, findings indicate that well-designed PDC training can support competence and SE development across diverse learner profiles and should explicitly target SE for implementing SRL and digital technology.

Evaluating Pre-Service Teachers' Promotion of SRL in GenAI Settings through Lesson Plans

Presenting Author: Guy Cohen, Tel Aviv University, Israel; **Co-Author:** Chen Bitton, Tel Aviv University, Israel; **Co-Author:** Anat Cohen, Tel Aviv University, Israel

Self-Regulated Learning (SRL) has become essential for equitable participation in classrooms enhanced by GenAI, enabling learners to monitor their thinking, critically evaluate AI outputs, and maintain agency over decisions. However, the capacity to foster SRL begins in planning, where pedagogical choices shape

learning opportunities before instruction occurs. This study investigates whether pre-service teachers can effectively incorporate SRL into instructional design with GenAI tools. An analysis of 37 lesson plans from diverse pre-service teachers revealed a strong awareness of SRL and consistent use of foundational strategies, yet notable gaps in promoting advanced metacognitive processes. These findings position lesson plans as a valuable tool for evaluating teachers' proficiency in creating SRL-supportive instruction and highlight the need for teacher education programs to strengthen guidance on planning for SRL, thereby promoting reflection, autonomy, and metacognitive growth among learners.

Beyond Tech Skills: Situated Learning Builds Deeper Pedagogical Knowledge in Teacher Training

Presenting Author:Tabea Rosenkranz, Ulm University, Germany; **Co-Author:**Tina Seufert, Ulm University, Germany; **Co-Author:**Aileen Herold, Ulm University, Germany; **Co-Author:**Anita Radi-Pentz, Ulm University Institute of Psychology and Education, Germany

Teachers face increasing expectations to design meaningful technology-enhanced learning, yet many feel insufficiently prepared for this challenge. This study examines how two professional-development (PD) designs support teachers' pedagogical digital competence (PDC): a knowledge-instruction (KI) and a situated-learning format with authentic classroom enactment (KI+SL). In a six-month field study ($N_{\text{post}} = 26$), teachers completed pre-post measures of technological and pedagogical knowledge, perceived digital competence, digital-teaching self-efficacy, and technology-integration practices (ICAP). Both formats improved technological knowledge and ICAP practices. However, only KI+SL led to gains in pedagogical-psychological knowledge ($z = 2.85$, $p = .002$), producing significantly higher posttest levels than KI ($U = 154.00$, $p = .006$). Other PDC components remained stable across formats. The findings suggest that while conceptual instruction enhances technological proficiency, situated learning is crucial for developing deeper pedagogical foundations needed to design engaging digital learning.

Evaluating Teacher Training for Digital Competence: A Co-Designed Cost-Benefit Framework

Presenting Author:Yildiz Isaoglu, University for Continuing Education Krems, Austria; **Co-Author:**Tobias Ley, University for Continuing Education Krems, Austria; **Co-Author:**Marlene Wagner, University for Continuing Education Krems, Austria

The rapid digitalisation of education has intensified the need for evidence-informed and resource-conscious teacher professional development (TPD). Yet evaluation practices remain fragmented with limited alignment between training outcomes and resource use. This study, grounded in boundary-crossing theory and conducted within a design-based research process, advances the development of a Cost-Benefit Framework to support decision-making in TPD for pedagogical digital competence. Using a participatory design approach, three international workshops engaged 32 stakeholders, including ministry representatives, training providers, and researchers from seven countries. Stakeholder journey mapping was used to examine current decision-making processes and identify user-informed requirements for the CBF. Findings indicate that TPD decisions are multi-layered but often fragmented, with limited comparability and unclear cost-benefit considerations. Stakeholders emphasised the need for a framework that functions as a boundary object, integrating diverse data, promoting transparency and cross-institutional learning. Preliminary design principles are proposed to guide further refinement of the framework.

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Language Center 205

Symposium

Critical Online Media and AI Use by Students in Higher Education: Innovative Multimodal Analyses

Keywords: AI in higher education, Assessment methods and tools, Attitudes and beliefs, Content analysis, Critical thinking, Higher education, Online learning, Video analysis

Interest group: SIG 04 - Higher Education

Discussant: Patricia Alexander, University of Maryland, United States

Critical Online Reasoning (COR)—the ability to evaluate, select, and use online information for academic purposes—is a key competence for reflective learning in digital higher education. This session presents an innovative multimodal research program combining longitudinal study of students' AI- and media engagement, web-source content analysis, narratological coding, and reconstructive hermeneutics to examine how students engage with real online sources while completing authentic COR tasks. Drawing on a shared real-web, performance-based COR dataset, the four studies integrate analyses of web-behavior, reliance on narrative framings of selected sources, and screen-recorded reasoning processes.

Together, the studies reveal how students identify (or overlook) source quality, authority cues, narrative bias, or avoid rational, independent evaluation during reasoning. The integrated multi-method approach provides novel insights into students' digital reasoning practices and highlights implications for the design of COR assessments and targeted instructional interventions that foster reflective, evidence-oriented engagement with online information in higher education.

Three-Wave Cross-Cohort Study of Students' AI and Media Engagement Across Four Academic Domains

Presenting Author:Lukas Trierweiler, Johannes Gutenberg University of Mainz, Germany; **Co-Author:**Olga Zlatkin-Troitschanskaia, Johannes Gutenberg University Mainz, Germany; **Co-Author:**Marie-Theres Nagel, Johannes Gutenberg University Mainz, Germany; **Co-Author:**Tobias Scherer, Johannes Gutenberg Universität Mainz, Germany; **Co-Author:**Elias Griesbeck-Bachmann, Johannes Gutenberg University Mainz, Germany; **Co-Author:**Christian Schemer, Johannes Gutenberg University Mainz, Germany; **Co-Author:**Marcus Maurer, Johannes Gutenberg University Mainz, Germany

This study examines how students' use of LLM chatbot evolves across their first three academic terms and how it relates to their epistemic beliefs and other study-related media across four academic domains. Survey data reveal that chatbot use significantly increased over time, while engagement with traditional study-related media (e.g., textbooks, YouTube, Wikipedia) declined. Epistemic beliefs significantly predicted AI adoption: Personal beliefs (e.g., trust in sources) were positively associated with chatbot use, whereas reflexive beliefs (e.g., critical evaluation) were negatively associated with domain-specific variation. Longitudinal analyses further indicate within-student behavioral shifts, suggesting active substitution of traditional learning media by AI tools. These findings highlight the importance of designing AI-integrated curricula that account for students' evolving epistemic beliefs and media habits, supporting adaptive and reflective learning in higher education. Future research should extend longitudinal tracking to explore long-term trends, domain-specific effects, and potential saturation in AI adoption.

How University Students' Online Source Quality Varies Across Contexts in Critical Online Reasoning

Presenting Author:Elias Griesbeck-Bachmann, Johannes Gutenberg University Mainz, Germany; **Co-Author:**Tobias Scherer, Johannes Gutenberg Universität Mainz, Germany; **Co-Author:**Olga Zlatkin-Troitschanskaia, Johannes Gutenberg University Mainz, Germany; **Co-Author:**Christian Schemer, Johannes Gutenberg University Mainz, Germany; **Co-Author:**Marcus Maurer, Johannes Gutenberg University Mainz, Germany; **Co-Author:**Marie-Theres Nagel, Johannes Gutenberg University Mainz, Germany; **Co-Author:**Lukas Trierweiler, Johannes Gutenberg University of Mainz, Germany

As higher education becomes increasingly digital, students' ability to evaluate the quality of online information is essential. This study examines how the quality of online sources used by first-year university students varies across application contexts in domain-specific Critical Online Reasoning (COR) tasks. We analyzed 1,070 websites accessed by 273 students completing four COR tasks, coding each source by website genre and information quality. Results show that reasoning context significantly shaped source use. In transdisciplinary tasks, students selected more complete sources than in fundamental or practical tasks. Website genre choices also differed by context, with students in practical tasks less likely to use interest group websites, and those in transdisciplinary contexts less likely to use government sites compared to news sources. Website genre further predicted information quality, with news articles showing higher balance than commercial, government, or encyclopedia sites. Findings highlight the need for early instruction that supports context-sensitive online reasoning.

Critical Use of Online Sources by University Students: Narrative Analyses to Detect Authority Bias

Presenting Author:Amina Touzos, Johannes Gutenberg-Universität Mainz, Germany; **Co-Author:**Mita Banerjee, Johannes Gutenberg-Universität Mainz, Germany; **Co-Author:**Olga Zlatkin-Troitschanskaia, Johannes Gutenberg University Mainz, Germany; **Co-Author:**Carla Schelle, Johannes Gutenberg-Universität Mainz, Germany; **Co-Author:**Dominik Braunheim, Johannes Gutenberg-Universität Mainz, Germany; **Co-Author:**Patricia Alexander, University of Maryland, United States

University students increasingly rely on online information, yet many sources contain subtle narrative devices that can shape reasoning and reinforce authority bias. This study examines how students engage with narrative structures in self-selected online sources while completing domain-specific Critical Online Reasoning (DOM-COR) tasks. Using narratological method, we analyzed the narrative features of sources consulted for three socio-economic topics (nudging, wind energy, pilot strikes) and compared them with students' written responses. Source quality varied considerably, with many non-academic sites employing metaphors, emotional language, and framing cues that established particular individuals or institutions as authoritative. Students frequently adopted these narrative frames uncritically, mirroring persuasive structures in their own reasoning. When students resisted such frames, they used more neutral formulations or reframed emotionally loaded concepts. Findings reveal systematic challenges in detecting narrative and authority biases, underscoring the need for instructional interventions that strengthen students' critical engagement with online information in domain-specific contexts.

University Students' Framing and Rational Reasoning in Open-Web Tasks: A Reconstructive Approach

Presenting Author: Dominik Braunheim, Johannes Gutenberg-Universität, Germany; **Co-Author:** Carla Schelle, Johannes Gutenberg-Universität, Germany; **Co-Author:** Olga Zlatkin-Troitschanskaia, Johannes Gutenberg University Mainz, Germany; **Co-Author:** Mita Banerjee, Johannes Gutenberg-Universität Mainz, Germany; **Co-Author:** Amina Touzos, Johannes Gutenberg-Universität Mainz, Germany

University students increasingly rely on online information for academic tasks, yet little is known about how they navigate digital sources in real time. This study reconstructs students' reasoning processes in open-web Critical Online Reasoning (COR) tasks by integrating screen recordings with analyses of selected online sources and written responses. Using a hermeneutic-reconstructive approach, we traced how students developed arguments during a domain-specific COR task on "Nudging". Findings reveal substantial variation in rationality and reasoning: some students engaged critically with contradictory claims and constructed coherent arguments, while others displayed fragmented reasoning, superficial source use, and uncritical adoption of narrative framings. Screen recordings exposed meaning-making processes otherwise invisible in final responses, including moments where students shifted stance or avoided rational, independent evaluation. This reconstructive approach offers a powerful method for uncovering digital reasoning processes and provides implications for designing COR-assessments and instructional supports that foster critical engagement with online information.

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Single Paper

Higher Education

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Keywords: Achievement, At-risk students, Competences, Diversity, Higher education, Learning approaches, Meta-analysis, Motivation, Science education, Social aspects of learning and teaching, Student-teacher interactions, Teacher effectiveness, Teaching innovation or innovative teaching practices

Interest group: SIG 04 - Higher Education

Chairperson: Liisa Myrsky, University of Helsinki, Finland

Approaches to learning and sense of belonging predicting study progress among science students

Keywords: Achievement, Learning approaches, Science education, Social aspects of learning and teaching

Presenting Author: Liisa Myrsky, University of Helsinki, Finland; **Co-Author:** Veera Kallunki, University of Helsinki, Finland

Students' study progress is a key issue for universities at least in Finland where the study times tend to extend from the target. Students' approaches to learning, such as organized studies, seeking understanding or applying an unreflective approach, are shown to be related to study progress. Also, a sense of belonging seems to affect study motivation, academic performance and reduce drop out intentions. Feeling a sense of belonging to other human beings is essential, as we are social animals. We examined how a sense of belonging and learning approaches predict study progress among 184 science students. Results showed that organized studying was a strong predictor of earned study credits, but sense of belonging explained even more of the variance. Results suggest that the importance of a positive sense of belonging to study strategies and how students proceed with their studies should be scrutinized.

Socio-emotional skills and academic achievement in higher education: A systematic literature review

Keywords: Achievement, Competences, Higher education, Meta-analysis

Presenting Author: Janine JONGBLOED, Université de Montpellier, France; **Co-Author:** Manuel Bächtold, University of Montpellier, France; **Co-Author:** Laurent Brun, University of Montpellier, France

Socio-emotional (SE) skills have become a topic of interest for explaining learning processes and designing pedagogical interventions for improving classroom experiences and academic outcomes. The aim of the present study was to evaluate the effects of SE skills and interventions on academic achievement at the tertiary level. A systematic review of the literature was conducted to collect the research findings from the past two decades. Several thousand studies were found, but only a limited number measured an academic outcome using either qualitative or quantitative methods. The results highlighted the heterogeneity in the conceptualization of the skills examined and the measures of academic performance. The findings give a theoretically driven overview of the types of concepts and measures employed and the findings specific to different domains of SE skills, highlighting how universities could benefit from integrating SE skill development.

Does background matter? Application motives and performance of underrepresented students

Keywords: Achievement, At-risk students, Diversity, Motivation

Presenting Author: Henna Kevarinmäki, University of Turku, Finland; **Co-Author:** Tommi Kokkonen, University of Turku, Finland; **Co-Author:** Hanna Nori, University of Turku, Finland; **Co-Author:** Jake McMullen, University of Turku, Finland

Background influences educational choices, leading to the underrepresentation of certain groups in higher education. Issues related to financing, external responsibilities, and adapting to academic culture create a "hostile obstacle course" that can hinder learning and lead to dropout. However, after the massification of higher education, the role of background in shaping academic experiences remains unclear. Particularly interesting are natural sciences for their high dropout rates and historical exclusivity for white men from high socioeconomic backgrounds. This study explores connections between underrepresented characteristics (age, gender, origin, and socioeconomic background) and study performance (first-year GPA and credits), both directly and via application motivation. Analysing data from 665 Finnish science and mathematics students with regression and structural equation modelling, we find that while background still defines underrepresentation, it does not predict academic performance. Notably, some underrepresented characteristics even predict higher performance. Future guidelines for research regarding study paths of underrepresented students are discussed.

Fostering Pre-Service Teachers' Technological Pedagogical Reasoning

Keywords: Artificial intelligence, Digital transformation, Pre-service teacher education, Reasoning

Presenting Author: Kirsten Gronau, Carl von Ossietzky University Oldenburg, Germany; **Co-Author:** Ulrike-Marie Krause, Institute of Education, Carl von Ossietzky University Oldenburg, Germany

Recent years have seen significant developments in digital technology, with artificial intelligence serving as a prime example that transforms educational practices. Pre-service teachers must learn how to address these innovations in their future classrooms. The aim of this 2x2 intervention study in German teacher education is to foster pre-service teachers' knowledge and reasoning skills about digital technologies in pedagogical contexts in an online learning unit (120 min.) with cooperative and interactive learning elements. In the learning unit, 111 pre-service teachers learned about feedback for students and artificial intelligence as well as how to formally reason about digital technologies in pedagogical contexts. After the rating is completed the effects of the learning unit as well as cooperative and interactive learning elements on reasoning will be analyzed using analyses of variance to determine the significance and interaction of these factors on pre-service teachers' reasoning.

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10 June 2026 14:00 - 15:30

Porthania P724

Single Paper

Higher Education, Motivational, Social and Affective Processes, Teaching and Teacher Education

Single Paper paper_type_1 session 32

Keywords: Diversity, Evidence-based teaching, Higher education, Interdisciplinary, Language, Psychometrics, Quantitative methods, Self-efficacy, Teacher education

Interest group: SIG 11 - Teaching and Teacher Education

Chairperson: Veera Lampinen, University of Helsinki, Finland

Practice self-efficacy changes across teacher education field practice: Is the devil in the detail?

Keywords: Higher education, Psychometrics, Self-efficacy, Teacher education

Presenting Author: Tine Nielsen, UCL University College, Odense, Denmark; **Co-Author:** Anders Houe Wisniewski, UCL University College, Odense, Denmark

In educational and psychological research related to education the most common approach to assessment of change is through utilization of measurement

scales and various methods for determining (standardized) effect(s). This approach may bear less relevance in the more practical context of assessing change in constructs such as self-efficacy for specific core skills or practices of a profession as this relates to specific time periods in a degree program. In the study, we compare results on changes in practice self-efficacy across three timepoint across field practice at the scale level and item level for two dimensions and the included single items for Danish first-year student teachers. We use paired samples t-tests and standardized effect sizes at the scale level and analyses of marginal homogeneity and gamma coefficient as effect sizes at the item level. We will discuss the usability of the results for curriculum designers and educators in teacher education.

From silos to synergy: Interprofessional education for supporting children at risk

Keywords: Higher education, Interdisciplinary, Self-efficacy, Teacher education

Presenting Author: Esther Canrinus, University of Agder, Norway; **Co-Author:** Camilla Herlofsen, University of Agder, Norway; **Co-Author:** Inger Marie Dalehefte, University of Agder, Norway; **Co-Author:** Anne Karin Vikstøl Olsen, University of Agder, Norway; **Co-Author:** Nataly García, University of Agder, Norway

Addressing interprofessional collaboration (IPC) around children at risk has become a priority. The present study examines 209 2nd and 153 3rd year Norwegian students' self-perceived IPC skills within an interprofessional educational program on at-risk children and youth. It explores potential differences between the two year groups and between student teachers and students from health and social care disciplines, given the limited inclusion of teacher education in prior IPC research. Students perceive themselves to be between 'good' and 'very good' at interprofessional collaboration and communication. Furthermore, 57.5% of the students perceived they had improved their ability to collaborate interprofessionally after the seminar. We found significant differences between 2nd and 3rd-year students, but not between student teachers and other students. Thus, the seminar may enable future professionals, including student teachers, to collaborate and communicate in such a way that they truly create a team around the child.

Evidence-Informed Classroom Management in Physical Education: Mindsets, Beliefs, and Self-Efficacy

Keywords: Evidence-based teaching, Quantitative methods, Self-efficacy, Teacher education

Presenting Author: Johanna Korte, Department of Educational Science, University of Freiburg, Germany; **Co-Author:** Katrin Weller, Department of Educational Science, University of Freiburg, Germany; **Co-Author:** Tamar Voss, University of Freiburg, Germany

Aligning teacher practice with scientific evidence is a key policy goal and is considered essential for effective teaching, yet it faces persistent barriers. This study examined how cognitive and motivational teacher characteristics are associated with pre-service physical education (PE) teachers' intention to engage in evidence-informed thinking, focusing on classroom management (CM). A cross-sectional survey with $N = 236$ PE student teachers from four German universities assessed beliefs about the potential of operant conditioning for preventive CM, mindsets, self-efficacy, and intention to use evidence about CM in PE. Regression analyses revealed that mindsets—but not self-efficacy or beliefs about operant conditioning—significantly predicted the intention to use evidence with entity beliefs negatively and incremental beliefs positively predicting intention. These findings underscore the importance of fostering a growth mindset to strengthen evidence-informed thinking in PE teacher education.

Navigating Linguistic Diversity: Pre-Service Teachers' Self-Efficacy in Providing Explanations

Keywords: Diversity, Language, Self-efficacy, Teacher education

Presenting Author: Saskia Samland, Leuphana University of Lüneburg, Germany; **Co-Author:** Poldi Kuhl, Leuphana Universität Lüneburg, Germany

The language used in school often differs greatly from students' everyday language. Proficiency in language skills is essential for academic success. To support all learners in their language skills, teachers need language-supportive teaching skills, which are not yet sufficiently integrated into teacher training programs. Consequently, many pre-service teachers feel inadequately prepared for linguistically diverse classrooms. Self-efficacy regarding language-supportive teaching has hardly been investigated in German-speaking countries. This presentation addresses instructional explanations as a central teaching practice and links it to language-supportive teaching practices. Based on a longitudinal study it examines which factors influence self-efficacy in explaining in linguistically diverse contexts during the practical semester. The study involved $N = 52$ teacher training students from a university in northern Germany. Initial findings indicate links between teacher students' teaching experiences regarding language-supportive teaching and their self-efficacy in this teaching context. We conclude by discussing the implications for teacher education and educational research.

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Porthania P617

Single Paper

Higher Education

Single Paper paper_type_1 session 31

Keywords: Argumentation, Cognitive skills, Critical thinking, Digital transformation, Higher education, Integrated learning, Learning approaches, Qualitative methods, Reflection

Interest group: SIG 04 - Higher Education

Chairperson: Susanna Hartikainen, University of Helsinki, Finland

Undergraduate students' conceptions of critical thinking

Keywords: Cognitive skills, Critical thinking, Higher education, Learning approaches

Presenting Author: Ellinor Allen, Monash University, Australia; **Co-Author:** Colin Jevons, Monash University, Australia

Critical thinking skills are best developed as students build meaningful knowledge structures throughout their educational journey, and it has been shown that students need to understand what these skills are so as to effectively learn them. This is increasingly significant when it is vital to both add value to and evaluate AI-generated output. Understanding students' views about critical thinking and their learning strategies will help to guide future initiatives to raise student awareness of critical thinking and build effective skills for lifelong learning. In this predominantly qualitative mixed-methods study, approximately 1000 first-year university students described their view of critical thinking as well as the techniques they use in learning. Preliminary results show wide-ranging student attitudes, highlighting a need for educators to clearly articulate the aspect(s) of critical thinking being developed and to teach the conscious development of these skills. Full results will be presented at the conference.

Reflective writing in an experiential learning context to foster intellectual empathy and humility

Keywords: Critical thinking, Higher education, Integrated learning, Reflection

Presenting Author: Colin Jevons, Monash University, Australia; **Co-Author:** Ellinor Allen, Monash University, Australia

Critical thinking and well-informed decision making rely on both intellectual empathy and intellectual humility, but take time and ongoing instruction to develop. Reflective writing has been shown to develop critical thinking skills generally and improve student learning. This study focuses on developing specific aspects of critical thinking in a short space of time. Taking students away from their traditional classroom-based learning environment via a capstone experiential study tour, the use of reflective writing was emphasised throughout to encourage students to practise and specifically develop both intellectual empathy and intellectual humility in an intensive learning environment. Data suggests that students were able to improve these two important traits with carefully structured guidance in reflective writing, and through pedagogical design of a two-week experiential tour.

Epistemological Beliefs and Critical Online Reasoning Skills Among First-Year Students

Keywords: Cognitive skills, Critical thinking, Digital transformation, Higher education

Presenting Author: Lisa Martin de los Santos, Johannes Gutenberg-University Mainz, Germany; **Co-Author:** Eric Klopp, Saarland University, Germany; **Co-Author:** Olga Zlatkin-Troitschanskaia, Johannes Gutenberg University Mainz, Germany; **Co-Author:** Anna Horrer, Institute of Medical Education, LMU University Hospital, LMU Munich, Germany; **Co-Author:** Jan Zottmann, Institute of Medical Education, LMU University Hospital, LMU Munich, Germany

Students increasingly rely on the internet and AI tools for learning, yet many lack essential Critical Online Reasoning (COR) skills. This study examines how Epistemological Beliefs (EBs) relate to COR development during the first year of higher education. In a two-wave panel study ($N = 439$) across four disciplines, students reported their EBs and self-assessed COR skills at the beginning of their first semester and again after one year. Results show domain-specific changes in EBs, with the largest increase observed among social science students, as well as significant gains in AI-related COR skills across all domains. Regression analyses indicate that the predictive power of EBs for COR varies over time and differs between disciplines. The findings suggest that COR development is shaped by evolving, and potentially domain-specific EBs, underscoring the need for targeted instructional support.

Medical Students' Online Reasoning: Navigating Health Information and Commercial Bias

Keywords: Argumentation, Critical thinking, Higher education, Qualitative methods

Presenting Author:Amina Touzos, Johannes Gutenberg-Universität Mainz, Germany; **Co-Author:**Olga Zlatkin-Troitschanskaia, Johannes Gutenberg University Mainz, Germany; **Co-Author:**Mita Banerjee, Johannes Gutenberg-Universität Mainz, Germany; **Co-Author:**Carla Schelle, Johannes Gutenberg-Universität, Germany; **Co-Author:**Dominik Braunheim, Johannes Gutenberg-Universität, Germany

In the digital age, students must develop Critical Online Reasoning (COR) skills to identify unreliable or biased online information. For medical students, this includes an additional challenge: recognizing commercial interests in healthcare-related content and distinguishing factual information from promotional or biased messaging. This study investigates how medical students approach a digital COR task in the medical domain. Using narrative analysis, we first examined the online sources students consulted and then analyzed their responses to assess whether they critically engaged with, resisted, or uncritically adopted the narrative frames and potential bias presented in these sources. Results indicate that students were generally able to resist frames related to product placement, whereas adopted frames were predominantly connected to medical terminology and clinical reasoning structures. These findings suggest that medical students' COR is influenced by professional reasoning frameworks, highlighting implications for medical education.

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10 June 2026 14:00 - 15:30

Porthania P723

Single Paper

Teaching and Teacher Education

Single Paper paper_type_1 session 9

Keywords: Competence development, Design based research, Digital learning, Digital transformation, Educational technology, Interdisciplinary, Knowledge creation, Pre-service teacher education, Research-based teaching, Teacher professional development

Interest group: SIG 11 - Teaching and Teacher Education

Chairperson: Bastian de Jong, University of Amsterdam, Netherlands

Open Educational Practices for fostering Critical Digital Competence in Teacher Education

Keywords: Design based research, Digital learning, Educational technology, Pre-service teacher education

Presenting Author:Maria Carme Peguera-Carré, Universitat de Lleida, Spain; **Co-Author:**Sara Buils, Universitat Jaume I, Spain; **Co-Author:**Daniel Gutiérrez-Ujaque, University of Lleida, Spain; **Co-Author:**Victoria I. Marín, University of Lleida, Spain

The need for comprehensive digital competence in teacher education is intensified by emerging technologies like Generative Artificial Intelligence, demanding a shift towards Critical Digital Competence, condition/prerequisite of student agency. In this paper, we present the design-based research process followed to create, implement and evaluate different open educational practices in initial teacher education to support critical digital competence and student agency, as part of a broader research project. Nine educational practices were designed and are implemented across five Spanish universities with future teachers for early childhood education and primary education. Data collection includes the designs of the practices, students' artifacts developed in those practices, interviews with the educators involved in the implementations, and focus groups with students. Implementations and data analysis are still ongoing. Preliminary results reflect the characteristics of the different educational designs and the dynamics of the courses.

Teacher Well-Being With Digital Technologies: Social Representations of Finnish Pre-Service Teachers

Keywords: Digital transformation, Educational technology, Pre-service teacher education, Teacher professional development

Presenting Author:Cécile Vassaux, UNIGE, Switzerland; **Co-Author:**Eija Juntunen, University of Helsinki, Finland; **Co-Author:**Joris Felder, Ylyl, Switzerland; **Co-Author:**Gaëlle Molinari, TECFA, Université de Genève, Switzerland; **Co-Author:**Katja Upadyaya, University of Helsinki, Finland

Pre-service teachers stand at the heart of the profession's future, yet their representations of well-being in the evolving digital landscape of education remain underexplored. To address this gap, this study investigates the social representations of 105 Finnish pre-service teachers. Based on the hierarchical evocation task, an online questionnaire was employed to collect the words participants associated with "teacher well-being in the context of teaching with digital technologies". Participants ranked these words by perceived importance and rated their connotations. A prototypical analysis was applied to examine the structure and content of the social representations, while a polarity test assessed attitudinal orientation. The social representation centres on four salient terms: exhaustion, digital competence, workload and physical problems. The balanced distribution of positively and negatively connoted terms suggests a multifaceted understanding of this social representation. The findings call for teacher education to mitigate technological strain and to foster the competencies underpinning teacher well-being.

From Digital Tools to Digital Teaching: Strengthening Pre-Service Teachers' Digital Competence

Keywords: Competence development, Digital learning, Knowledge creation, Pre-service teacher education

Presenting Author:Andreas Gegenfurtner, University of Augsburg, Germany; **Co-Author:**Özün Keskin-Senkal, University of Augsburg, Germany

This study examined the effectiveness of a teacher training intervention designed to develop pre-service teachers' digital competence and their ability to integrate self-regulated learning (SRL) and the ICAP framework into teaching. The training combined theoretical input, design practice, and reflection to foster both competence development and transfer. Thirty pre-service teachers completed pre- and post-tests assessing digital competence, self-efficacy, beliefs, and engagement orientations as indicators for learning transfer. Results showed significant gains in digital competence ($d = 0.87$, $p < .001$), SRL self-efficacy ($d = 0.66$, $p < .001$), adoption intentions ($d = 0.40$, $p = .032$), and active ICAP engagement ($d = 0.47$, $p = .009$). Expectancy of success and perceived cost showed marginal improvements, while task value and general educational psychology knowledge remained stable. The findings suggest that theoretically grounded training can enhance pre-service teachers' capacity to design technology-enhanced learning environments and immediate predictors of transfer into future teaching.

Designing learning cycles: How variations shape student teachers' self-efficacy for a core practice

Keywords: Competence development, Interdisciplinary, Pre-service teacher education, Research-based teaching

Presenting Author:Hanne Jensen, UCL University College, Denmark; **Co-Author:**Christopher Neil Prilop, University of Aarhus, Denmark; **Co-Author:**Stefan Ting Graf, UCL University College, Denmark

This study examines how student teachers' self-efficacy for a core practice, "scene-setting to engage pupils," develops through different institutional designs of learning cycles. McDonald et al. (2013) propose that acquiring core practices involves a situated, iterative process of representation, approximation, enactment, and reflection. These phases can be organized in varied ways (e.g., approximation before representation with video analysis), potentially activating different sources of self-efficacy (Bandura, 1994). This study investigated (a) how learning cycles were designed across participating institutions and (b) how these designs related to student teachers' self-efficacy. Data include interviews with 21 student teachers and documentation of learning cycle phases from three teacher education programs – math, language arts, and science. Early findings indicate that design variations shape opportunities to connect theory and practice and provide distinct sources of self-efficacy - mastery and vicarious experiences, social persuasion, and physiological cues - affecting student teachers' judgments of their capability with the target practice.

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10 June 2026 14:00 - 15:30

Porthania P722

Single Paper

Teaching and Teacher Education

Single Paper paper_type_1 session 36

Keywords: AI in higher education, Case studies, Language, Mixed methods, Motivation, Multicultural education, Pre-service teacher education, Social aspects of learning and teaching, Social interaction, Student-teacher interactions, Teacher educator, Teaching/instruction

Interest group: SIG 11 - Teaching and Teacher Education

Chairperson: Dominik Petko, University of Zurich, Switzerland

Emotional Discourse as a Space for Identity construction in Pre-Service Teacher Education

Keywords: Case studies, Pre-service teacher education, Social aspects of learning and teaching, Social interaction

Presenting Author:Naama Ben-Dor, Ben-Gurion University of the Negev, Israel; **Presenting Author:**Rotem Trachtenberg-Maslaton, Ben-Gurion University of the Negev, Israel; **Co-Author:**Dana Vedder-Weiss, Ben-Gurion University of the Negev, Israel

While emotions are central to identity construction, little is known about how emotional discourse unfolds in university-based practicum courses and shapes pre-service teachers (PSTs)' identities. Addressing this gap, this study examines emotional deepening (e.g., acknowledging or legitimizing emotion) and narrowing (e.g., normalizing or minimizing emotion) within a year-long practicum course and their relation to gaps between PSTs' current and desired teacher identities. Discourse analysis revealed three contrasting cases: one dominated by narrowing of emotional discourse, with no articulation or exploration of identity gaps; one showing emotional deepening with articulation of an identity gap, but no exploration of how to close the gap; and one featuring oscillations between co-narrowing and co-deepening that fostered both articulation and gap-closing exploration. The study advances understanding of how emotional discourse shapes identity construction in teacher education and offers tools for analyzing its dynamic nature.

Pedagogical Empathy in EMI: How Teacher Educators Respond to Linguistic Challenges.

Keywords: Language, Mixed methods, Pre-service teacher education, Teacher educator

Presenting Author:Charles Selorm Dzormeku, University of Helsinki, Finland; **Co-Author:**Koen Veermans, University of Turku, Finland; **Co-Author:**Alex Adobaw-Bansah, University of Cape Coast, Ghana

This study examined teacher educators' perspectives on pre-service teachers' linguistic challenges in Ghana's English-medium teacher education programmes. Using a mixed-methods approach, 150 teacher educators completed an adapted English-Medium Instruction (EMI) linguistic challenges scale developed by Aizawa et al. (2020). This was followed by in-depth interviews with a subset of participants. Repeated measures ANOVA and latent profile analysis indicated that writing and speaking were perceived to be more significantly challenging for pre-service teachers than reading and listening. Thematic and content analyses revealed distinct pedagogical responses between language and content teacher educators, influenced by their levels of perspective-taking. Findings highlight the need for linguistically responsive EMI pedagogy and policies that better support equitable teacher preparation.

Inside Out: Heutagogy Driving Educational Activism via Initiative-Based Academic Retraining

Keywords: Motivation, Multicultural education, Pre-service teacher education, Teaching/instruction

Presenting Author:Mirit Israeli, Kaye College of Education, Israel; **Co-Author:**Dafna Armoza-Levi, Kaye College of Education, Israel

This study explores the role of heutagogy as a catalyst for educational activism within multicultural teacher retraining programs. Conducted in the context of the Shahaf program at Kaye College of Education, the research examined a course designed around self-determined learning principles, integrating Self-Determination Theory (SDT) to foster autonomy, competence, and relatedness. Students initiated community-based educational projects across diverse cultural groups, including Bedouins and Jews, thereby enhancing intercultural competence and agency. Data drawn from reflective diaries and project documentation revealed strong intrinsic motivation and authentic engagement in activist practices. At the same time, instructors faced challenges related to cognitive load, flexibility, and differentiated scaffolding, highlighting the paradigm shift from knowledge authority to facilitator of learning. Findings suggest that the dialectic between freedom and supportive structure creates a safe space for authentic growth, positioning heutagogy as a powerful framework for advancing inclusivity, resilience, and professional identity in higher education.

Noticing through pupils' eyes: Using GenAI-mediated feedback to enhance relational noticing

Keywords: AI in higher education, Pre-service teacher education, Social aspects of learning and teaching, Student-teacher interactions

Presenting Author:Rikke Maagaard Gregersen, Aarhus University, Denmark; **Co-Author:**Christopher Neil Prilop, Aarhus University, Denmark; **Co-Author:**Birgitte Lund Nielsen, VIA University College, Denmark

AbstractThe rising number of Danish pupils struggling with psychosocial challenges highlights the need for teachers to develop relational noticing skills. While pupil feedback can support such noticing, traditional questionnaires often provide only superficial insights into pupils' experiences. This study explores whether lived experience descriptions (LEDs) (short pupil narratives about meaningful relational moments) can be transformed through Generative AI into richer qualitative feedback for pre-service teachers. As part of a practicum, pre-service teachers participated in video club sessions on relational noticing, incorporating GenAI-mediated summaries of pupils' LEDs. The study investigates how pupils experience relational classroom dynamics and how GenAI-mediated feedback influences pre-service teachers' noticing. Preliminary findings suggest that LEDs reveal important relational patterns, such as inclusion and responsiveness, that teachers often overlook. GenAI-enhanced feedback is expected to strengthen relational noticing by integrating external teacher perspectives with pupils' internal experiences, offering a promising direction for teacher education.

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Language Center 207

Single Paper

Higher Education

Single Paper paper_type_1 session 34

Keywords: AI in higher education, Artificial intelligence, Assessment methods and tools, Conversation/discourse analysis, Educational development, Goal Orientation, Higher education, Qualitative methods, Reflection, Teaching/instruction

Interest group: SIG 04 - Higher Education

Chairperson: Laura Felby, Aarhus University, Denmark

Teachers' Discourses on the Future of Teaching and Assessment in Higher Education

Keywords: Conversation/discourse analysis, Higher education, Qualitative methods, Teaching/instruction

Presenting Author:Nina Katajavuori, University of Helsinki, Finland; **Co-Author:**Pyörälä Eeva, University of Helsinki, Finland; **Co-Author:**Veera Kallunki, University of Helsinki, Finland; **Co-Author:**Päivi Kinnunen, University of Helsinki, Finland; **Co-Author:**Liisa Myrny, University of Helsinki, Finland

This study examines how university teachers envision and construct the future of teaching and assessment amid rapid digitalisation and societal change. Drawing on seven focus group interviews with 21 teachers from a multidisciplinary university, discourse analysis was used to explore how teachers talk about educational future: how teachers talk about students and their learning and what implicit assumptions about future learning and assessment are embedded in teachers' talk. The results showed that students were seen as a diverse group with varying levels of motivation and engagement. Teachers envisioned future teaching and assessment grounded in ethical, interactive, and authentic practices, with technology supporting, but not replacing, interaction and pedagogical integrity. While opportunities were acknowledged, maintaining interaction, ethics, and the human dimension of learning was seen as essential in the future. Recognising and making explicit the assumptions in teachers' discourses can open space for more values-based development in higher education.

Do we need a numeric assessment? University students' conceptions of gradeless assessment

Keywords: Assessment methods and tools, Educational development, Higher education, Qualitative methods

Presenting Author:Veera Kallunki, University of Helsinki, Finland; **Co-Author:**Liisa Myrny, University of Helsinki, Finland; **Co-Author:**Milla Räisänen, University of Helsinki, Finland; **Co-Author:**Pyörälä Eeva, University of Helsinki, Finland; **Co-Author:**Nina Katajavuori, University of Helsinki, Finland

This study explores university students' perceptions of gradeless assessment in higher education. The data comprised open-ended responses from 162 students collected from computer science and veterinary students in a multidisciplinary university. Preliminary results indicate that the advantages of gradeless assessment include reduced stress and competition, as well as an enhanced focus on learning. Conversely, students expressed concerns about uncertainty regarding their knowledge level and the potential impact on future studies and employability. However, the students' arguments for advantages or disadvantages differed, for example, pass-fail grade can be perceived as both motivating and demotivating. Results can be utilised in developing assessment practices in higher education.

Time, emotions and moral judgements: How university students position GenAI within their study

Keywords: AI in higher education, Artificial intelligence, Higher education, Qualitative methods

Presenting Author:Margaret Bearman, Deakin University, Australia; **Co-Author:**Tim Fawns, Monash University, Australia; **Co-Author:**Thomas Corbin, CRADLE, Deakin University, Australia; **Co-Author:**Michael Henderson, Monash University, Australia; **Co-Author:**Scott Liang, University of Queensland, Australia; **Co-Author:**Glenys Oberg, University of Queensland, Australia; **Co-Author:**Kelly Matthews, University of Queensland, Australia

The higher education literature investigating generative artificial intelligence (GenAI) often focuses on cheating, while students' perspectives of the technology are relatively underexplored. Taking a sociotechnical and relational stance, we qualitatively investigated how students position GenAI in relation to their studies. Seventy-nine students participated in focus groups across four Australian universities. We interpreted axial threads of time, emotions, and moral judgement running across three themes: 1) studying with and without GenAI; 2) mixing messages and assumptions; and 3) "coming from me": self-trust and resistance to dependency. Our findings illuminate a complex, dynamic and uncertain landscape, where students prioritise their own values.

Adapting and maintaining self-set generic skills goals during a two-years graduate program

Keywords: Goal Orientation, Higher education, Qualitative methods, Reflection
Presenting Author:Heleen van Ravenswaaij, UMC Utrecht, Netherlands

As goal-setting is beneficial for learning and students are often not good in setting and attaining goals, higher education institutes intent to improve students' abilities to set high quality of the goals. However, when faced with complex goals in a complex context, these goal qualities might not be realistic. We therefore interviewed thirty students four times throughout their two-years life sciences graduate program regarding the generic skills goal they set at the start of their program and goals that emerged throughout their studies. Results show that students didn't maintain their goal the entire two-years due to the perceived goal importance, relevance and availability of means. Many new goals were formulated by students, including academic goals, but also personal development goals, well-being goals, and occupational goals. Instead of focusing on goal success and failure, we propose to focus on goal adapting and to support students in developing goal-setting flexibility.

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Porthania P668
Single Paper
Higher Education

Single Paper paper_type_1 session 7

Keywords: Experimental studies, Higher education, Mathematics, Mixed methods, Professional vision, Qualitative methods, Social aspects of learning and teaching, Social interaction, Student learning
Interest group: SIG 04 - Higher Education
Chairperson: Katri Kleemola, University of Helsinki, Finland

Students' perceptions of contextual resources contributing to their agency in university courses

Keywords: Higher education, Qualitative methods, Social aspects of learning and teaching, Student learning
Presenting Author:Maarit Arvaja, University of Jyväskylä, Finland; **Co-Author:**Päivikki Jääskelä, University of Jyväskylä, Finland

The aim of this study is to explore university students' perceived contextual resources contributing to their agency in the university course contexts. The data consist of semi-structured thematic interviews of seven students participating in basic courses of educational and natural sciences. Data were analyzed by applying (reflexive) thematic analysis. The analysis was data driven, and the coded data on students' perceived agency resources were further analysed to form combinations according to shared meanings. From these combinations five themes (and related sub-themes) on aspects contributing to students' agency were generated: 1) Students' conceptions of their own learning capabilities, 2) teacher's role in promoting students' agency, 3) task design in promoting students' agency, 4) collaborative learning and interaction, 5) agentic relationship with the knowledge and learning practices. Even though, generally, the students experienced having access to supportive resources, their agency remained in some respects more apparent than actual.

Interventions to enhance students' social and academic integration: A systematic literature review

Keywords: Higher education, Social aspects of learning and teaching, Social interaction, Student learning
Presenting Author:Cindy Verboven, KU Leuven - University of Leuven, Belgium; **Co-Author:**Lynn Van den Broeck, KU Leuven (BE), Belgium; **Co-Author:**Tinne De Laet, KU Leuven, Belgium; **Co-Author:**Carolien Van Soom, University of Leuven, Belgium

Transitioning to university poses multiple challenges for students' social and academic integration, affecting their achievement, mental well-being, and sense of belonging. Although universities have introduced interventions to support this transition, a comprehensive overview of interventions that effectively improve social and academic integration is currently lacking. This systematic literature review, conducted according to PRISMA guidelines, addresses this gap by synthesizing evidence from 80 studies published in the past 25 years. Interventions were categorised into eight types based on their characteristics: (1) micro-interventions, (2) course and teaching strategies, (3) gamification and technology, (4) learning communities, (5) social support and mentoring, (6) orientation programmes, (7) summer schools, and (8) mindset-focused interventions. Using the effectiveness framework of van Yperen et al. (2017), 30% of interventions show strong to very strong evidence of effectiveness to enhance students' social and academic integration.

Medical students' professional vision in video thin slices of patient's room situations

Keywords: Experimental studies, Higher education, Professional vision, Student learning
Presenting Author:Annalena Kolb, University of Augsburg, Germany; **Presenting Author:**Ann-Kathrin Schindler, University of Augsburg, Germany; **Co-Author:**Petra Anders, University of Augsburg, Germany; **Co-Author:**Thomas Rothhoff, University of Augsburg, Germany; **Co-Author:**Ellen Kok, Utrecht University, Netherlands; **Co-Author:**Martin Gartmeier, TUM Medical Education Center, Germany; **Co-Author:**Marius Ott, University of Augsburg, Germany

In bedside teaching and other workplace-based learning situations, medical students frequently enter unfamiliar patient rooms filled with visual information: the patient themselves, but also contextual visual cues related to patients' mobility, nutrition, emotional state, and social support. Supporting medical students to develop a professional vision, encompassing both noticing and reasoning, is essential in these settings. In this experimental study, we investigate how different forms of instructional support (none, visual cueing, and visual cueing combined with think-aloud narrations) influence early-stage medical students' professional vision while they watch video thin slices showing initial patients' rooms entries. For the conference presentation, students' open responses will be coded against expert reference solutions developed from experienced physicians' answers. We expect all groups to show short-term improvements in professional vision after working with the video thin slices, with greater and more sustained learning gains in the conditions providing higher levels of support.

Engagement Profiles and the Role of Guided Drop-In Sessions in First-Year University Mathematics

Keywords: Higher education, Mathematics, Mixed methods, Student learning
Presenting Author:Jenni Bäckman, University of Eastern Finland, Finland; **Co-Author:**Johanna Rämö, University of Eastern Finland, Finland; **Co-Author:**Sanna Väisänen, University of Eastern Finland, Finland; **Co-Author:**Laura Hirsto, University of Eastern Finland, Finland

This mixed-methods study explores first-year mathematics students' engagement in the Extreme Apprenticeship (XA) approach, which offers weekly guided sessions to support students' learning. Data was collected three times during the first academic year from two Finnish universities (N = 461) using the Engagement Evaluation Questionnaire (EEQ), including open-ended questions. Engagement was analysed across three dimensions: meaning of studies, experienced participation, and study skills. Latent profile analysis was conducted, revealing varying numbers of profiles across measurement points: strongly, weakly, and socially engaged students. Changes in profiles were not tracked. Participation in guided sessions was linked to stronger engagement, while students who favoured independent study often showed weaker social engagement. Qualitative responses indicated guided sessions supported collaboration, but also independent learning. However, the EEQ did not fully capture engagement, possibly due to the specific nature of mathematics learning and student selection. These findings highlight the complexity of promoting study engagement.

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Language Center 203
Symposium
Teaching and Teacher Education

Understanding teachers' evidence-informed thinking: Current research trends and findings

Keywords: Attitudes and beliefs, Evidence-based teaching, Quantitative methods, Secondary data analysis, Teacher, Teacher education, Teaching/instruction
Interest group: SIG 11 - Teaching and Teacher Education
Chairperson: Tamar Voss, University of Freiburg, Germany
Organiser: Tamar Voss, University of Freiburg, Germany
Discussant: Marc Kleinknecht, Leuphana University Lüneburg, Germany

Teachers' engagement with scientific evidence is central to evidence-informed education, yet research highlights a persistent gap between scientific evidence and classroom practice. This symposium brings together three complementary papers. The first paper maps international trends in research on evidence-informed teaching, emphasizing the need for greater methodological diversity and rigor. The two remaining papers provide illustrative empirical studies on personal factors that foster or hinder teachers' evidence-informed thinking. Paper two investigates how teachers' beliefs about professionalism and the relation between theory and practice shape their "inquiry habit of mind," a volitional disposition that underlies evidence use. Paper three examines discrepancies between teachers' beliefs and reported strategies in classroom management, revealing a pronounced disconnect between teachers' beliefs, scientific evidence,

and classroom practice. The discussant will synthesize the contributions and outline how the findings pave the way for strengthening evidence-informed teaching.

Trends in the types and variety of evidence that educational researchers present (2010-2024)

Presenting Author:Izaak Dekker, Amsterdam University of Applied Sciences (AUAS), Netherlands; **Co-Author:**Martijn Meeter, Vrije Universiteit Amsterdam, Netherlands

Educational research is a contested field, with ongoing debates about its relevance, quality, diversity, and direction. Empirical insights into research trends can inform these discussions. This study examined topic and methodological trends by analysing 28,000 abstracts from major international conferences (2010–2024) using structural topic modelling, and by deductively coding 3,343 abstracts from five conferences across Asia, Europe, and America (2013, 2018, 2023). Globally, attention has increased to sustainability, emotions, wellbeing, and tertiary education. Tertiary is now studied twice as often as primary education. Methodologically, the share of intervention and methodological studies nearly halved (17% to 9%; 7% to 4%), while qualitative and review studies became more prevalent. Causal effect tests remain largely confined to psychological topics and student achievement in math and reading. These findings underscore the need for greater methodological diversity and broader types of evidence across educational research domains.

Beliefs before action: The inquiry habit of mind as a bottleneck in evidence-informed education

Presenting Author:Jana Groß Ophoff, University of Teacher Education Thurgau, Germany; **Co-Author:**Jürgen Schneider, German Institute for International Educational Research (DIPF), Germany; **Co-Author:**Colin Cramer, University of Konstanz, Germany

The call for evidence-informed education has increased expectations for teachers to engage with data and research as integral parts of their professional practice. Yet teachers' sustained use of evidence often remains limited. This study explores how teachers' beliefs about professionalism and about the relation between theory and practice are associated with their inquiry habit of mind—a volitional disposition linked to evidence-informed decision-making. Drawing on the mindset theory of action phases, predecisional beliefs are assumed to influence volition and, consequently, behavior. Data from a representative survey of 407 in-service teachers in Germany were analyzed using Bayesian regression. Findings show that relationing and reflective beliefs predict a stronger inquiry habit of mind, while transfer beliefs also relate positively, perhaps indicating a more instrumental understanding of evidence use—a view widely shared across educational policy and practice discourses. The results highlight epistemic and volitional mechanisms that underpin teachers' engagement with evidence.

When beliefs and teaching practice diverge from evidence

Presenting Author:Thamar Voss, University of Freiburg, Germany; **Co-Author:**Julia Kienzler, Universität Freiburg, Germany

Preventive classroom management is a key component of effective teaching. Applying principles of operant conditioning (OC) is central to preventing classroom disruptions, yet teachers often hold skeptical beliefs about OC, particularly regarding punishment. This study examined discrepancies between teachers' beliefs about OC principles and their reported classroom strategies. Sixty-seven in-service teachers provided open-ended responses to vignettes depicting classroom situations and rated predefined strategies corresponding to the four OC principles. They also indicated their beliefs about OC. Results regarding beliefs showed that positive reinforcement was most strongly endorsed. However, punishment strategies—especially positive punishment—dominated teachers' open-ended responses. These findings reveal a clear gap between teachers' beliefs about OC principles and the strategies they reported using—particularly concerning positive punishment in open-ended responses. The results suggest that spontaneous decisions may activate habitual punitive responses and highlight the need to strengthen teachers' evidence-informed reasoning in classroom management.

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Porthania P673

Symposium

Higher Education

Factors Influencing Higher Education Teachers' Teaching and Professional Competence

Keywords: AI in higher education, Collaborative learning, Higher education, Self-regulation, Student learning, Teacher, Teacher professional development, Teaching approaches, Teaching/instruction

Interest group: SIG 04 - Higher Education

Chairperson: Liisa Postareff, HAMK University of Applied Sciences, Finland

Organiser: Milla Räisänen, University of Helsinki, Finland

Organiser: Anna Parpala, University of Helsinki, Finland

Organiser: Petri Nokelainen, Finland

Organiser: Liisa Postareff, HAMK University of Applied Sciences, Finland

Discussant: Juuso Henrik Nieminen, Deakin University, Australia

Understanding factors influencing higher education teachers' teaching and professional competence is essential for improving teaching, supporting well-being, and enhancing student learning. This symposium brings together four studies addressing these factors. The first study examines the impact of teachers' working environment on their skills to regulate pedagogical development and collaborative practices using questionnaire data from 186 teachers and interviews with 49 teachers. The second study investigates how mindfulness mediates the relationship between teaching approaches and occupational well-being based on survey data from 109 teachers. The third study explores the impact of artificial intelligence (AI) on teachers' collaborative processes using a mixed-methods design with 39 teachers combining interviews, classroom/workshop observations, and a survey. The fourth study explores teachers' understanding of engagement, practices for student engagement and students' perceptions of their engagement combining interviews with 13 teachers and four case studies integrating classroom observations, teacher interviews and a student survey.

Supporting Teachers' Pedagogical Regulation: The Role of Leadership and Work Environment

Presenting Author:Mari Murtonen, University of Turku, Finland; **Co-Author:**Emmi Saariaho-Räsänen, University of Turku, Finland; **Co-Author:**Henna Vilppu, University of Turku, Finland

This study focuses on the impact of higher education teachers' working environment on their skills to regulate their pedagogical development and collaborative practices in teaching. The participants filled in an electrical questionnaire (n = 186) and part of them (n = 49) were interviewed. Through content analysis of written answers to open-ended questions and thematic interviews, categories for influential factors were identified. According to the results, work environment has a big impact on teachers' possibilities to regulate their pedagogical development both individually and collaboratively. The identified categories were: 1) available education and possibilities for continuous learning, 2) informal collegial collaboration, 3) formal possibilities for collaboration with colleagues, 4) structured and systematic lead of pedagogical development by the institution.

Higher Education Teachers' Teaching and Well-Being: The Mediating Effect of Mindfulness in Teaching

Presenting Author:Milla Räisänen, University of Helsinki, Finland; **Co-Author:**Anna Parpala, University of Helsinki, Finland; **Co-Author:**Petri Nokelainen, Tampere University, Finland; **Co-Author:**Ilmari Puhakka, Tampere University, Finland; **Co-Author:**Merly Kosenkranius, Häme University of Applied Sciences, Finland; **Co-Author:**Liisa Postareff, HAMK University of Applied Sciences, Finland

This study examines the mediating role of mindfulness in the relationship between teaching approaches and teachers' occupational well-being. A total of 109 higher education teachers, teaching both on-site and online, completed a survey assessing teachers' well-being (job satisfaction, work engagement, burnout), teaching approaches (interactive, transmissive, unreflective, organized, and constructive approach), and mindfulness in teaching. Linear regression and mediation analyses were conducted. Results showed that interactive teaching and intrapersonal mindfulness were positively associated with job satisfaction, while unreflective teaching and longer teaching experience were negatively related to job satisfaction. No significant mediating effects of mindfulness were found. An unreflective approach was negatively related to work engagement, and interpersonal mindfulness significantly mediated this relationship. Burnout was positively related to unreflective teaching, and this relationship was significantly mediated by intrapersonal mindfulness. Overall, findings highlight the importance of fostering mindfulness and reducing unreflective teaching to promote teachers' well-being and mitigate burnout.

Co-Thinking with AI - How AI Reconfigures Teacher Collaboration in Higher Education

Presenting Author:Essi Ryymin, Häme University of Applied Sciences, Finland; **Co-Author:**Taina Civil-Hirvonen, Häme University of Applied Sciences, Finland; **Co-Author:**Aleksi Räsänen, Häme University of Applied Sciences, Finland; **Co-Author:**Liisa Postareff, HAMK University of Applied Sciences, Finland

This presentation examines the evolving role of artificial intelligence (AI) in higher education, focusing on its impact on teachers' collaborative practices and experiences in collective pedagogical design. Utilizing qualitative data from workshop observations of 39 participants, along with 34 of them interviewed, the study explores how HE teachers utilize AI tools in co-design, shared problem-solving, and distributed expertise. Grounded in theories of shared cognition and learning, the research investigates how AI influences collaborative thinking, decision-making, and role negotiation among teachers. A key focus is on cognitive

well-being, addressing how AI affects cognitive load and workflow management in collaborative settings. Preliminary findings indicate that while AI can enhance shared understanding and streamline collaboration, it also introduces challenges related to trust, role negotiation, and increased cognitive load with unfamiliar tools.

Develop University Teaching for Student Engagement: Insights from Teachers and Students

Presenting Author: Irene Douwes-van Ark, University of Groningen, Netherlands; **Co-Author:** Marjon Fokkens-Bruinsma, University of Groningen, Netherlands; **Co-Author:** Jan Folkert Deinum, University of Groningen, Netherlands; **Co-Author:** Hanke Korpershoek, University of Groningen, Netherlands

In this study we give insight into university teaching for student engagement to support teachers in their didactical development. We interviewed 13 university teachers to understand what perspectives they have on student engagement (definition, teaching practices and influencing factors). With four case-studies, we further explored the interplay of teachers' perspectives (teacher interview), their teaching behaviour (classroom observation) and students' perceptions (student survey). Our interview data demonstrate that teachers have different perspectives on what student engagement is, though mostly focus on behavioural engagement. They adopt diverse teaching practices, such as interacting with students. Factors like teaching large student groups are of influence on their teaching. With our case-studies, we demonstrate (mis)alignments between the teachers' perspectives, teaching behaviour and students' perceptions. We discuss the amount of responsibility students can take for their engagement, the teacher and student interest for the subject matter, and the use of interactive activities in classes.

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Language Center 205

Symposium

Teaching and Teacher Education

Longitudinal Perspectives on Teacher Self-Efficacy

Keywords: In-service teacher education, Motivation, Pre-service teacher education, Primary education, Self-efficacy, Teacher education

Interest group: SIG 11 - Teaching and Teacher Education

Chairperson: Jennifer Paetsch, University of Bamberg, Germany

Discussant: Prof. Tina Seidel, Technical University of Munich, Germany

While teacher self-efficacy (TSE) is widely recognized as a critical factor for teacher effectiveness and student learning outcomes, longitudinal evidence on its development across the teaching career remains scarce. This symposium addresses this gap by presenting findings from longitudinal studies conducted across diverse educational contexts. The symposium explores how TSE develops and the factors influencing its trajectory across different teacher populations and professional phases.

The first study, conducted in the Netherlands with 492 preservice teachers, examines reciprocal relations between TSE and motivational constructs over a two-year period using latent growth modeling. The second study, based in Finland, investigates changes in TSE among 1,370 primary school teachers over three years, also employing latent growth modeling. The third study, conducted in Germany, follows 2,972 participants across multiple stages of teacher education over an eight-year period, using multilevel modeling.

The discussant will highlight common and divergent patterns and identify promising avenues for interventions.

Teachers' Self-Efficacy and Motivation in Teacher Education: Early Gains for Growth

Presenting Author: Marjolein Zee, Erasmus University Rotterdam, Netherlands; **Co-Author:** Fadie Hanna, Amsterdam University of Applied Sciences, Netherlands; **Co-Author:** Kathleen Rudasill, Virginia Commonwealth University, United States

Although teachers' sense of self-efficacy (TSE) is known to influence teacher development, little is known about how TSE and preservice teachers' motivation to become a teacher evolve together. This three-wave longitudinal study examined the relationship between TSE and motivation among 492 preservice teachers in four Dutch elementary education programs over the first two years of training. Participants completed measures of TSE and motivation at 6-month intervals. Latent growth curve analyses showed that initial levels of TSE and motivation were significantly correlated ($\beta = .54, p < .001$). Although their growth trajectories were positively related, this association was not statistically significant. These findings highlight the importance of fostering self-efficacy during the first six months of teacher education, as its link with motivation appears to diminish thereafter. Programs may therefore need additional strategies, such as strengthening student-teacher relationships and promoting a future time perspective, to sustain motivation over time.

Longitudinal Growth Trajectories of Primary School Teachers' Self-Efficacy

Presenting Author: Olli-Pekka Malinen, University of Helsinki, Finland; **Co-Author:** Akie Yada, Department of Psychology, Faculty of Education and Psychology, University of Jyväskylä, Finland, Finland; **Co-Author:** Hannu Savolainen, University of Eastern Finland, Finland

Teacher self-efficacy (TSE) refers to teachers' beliefs in their capabilities to perform specific teaching tasks at a specified level of quality. TSE is expected to be resistant to change, particularly among experienced teachers but evidence regarding this idea is limited. This study investigates the longitudinal change trajectories of TSE in behavior management and collaboration. The study uses survey data from 1370 primary school teachers in Eastern Finland, collected in seven rounds in 2013–2016. TSE was measured using the Behavior Management and Collaboration subscales of the Teacher Efficacy for Inclusive Practices scale. Latent growth curve modeling revealed that TSE in behavior management and collaboration increased over time, with significant individual variance in growth trajectories. Teachers with lower initial TSE levels exhibited greater increases. Experienced and male teachers had higher initial TSE in behavior management while female teachers demonstrated higher initial TSE in collaboration.

Long-Term Trajectories of Teacher Self-Efficacy Across Phases of Teacher Education

Presenting Author: Sebastian Franz, Catholic University of Eichstaett-Ingolstadt, Germany; **Co-Author:** Jennifer Paetsch, University of Bamberg, Germany

This study investigated the development of teacher self-efficacy (TSE) in 2972 German teachers over an eight-year period using longitudinal panel data. Multilevel modeling was employed to capture within-person change and assess linear, quadratic, and cubic time trends. Career stages were included as time-varying predictors to explain variations in initial TSE levels and change trajectories between university teacher training, the preparatory phase, and the early career stage. We found a nonlinear (cubic) TSE trajectory, with TSE trajectories differing significantly across career stages. Primary teachers and those with strong intrinsic motivation to become a teacher reported higher initial TSE, while lower secondary teachers exhibited flatter trajectories. We found that TSE was not associated with personality traits or extrinsic motivation. By modeling within-person change over time, this study builds upon previous cross-sectional research, contributing to a deeper understanding of fluctuations in professional beliefs across career stages.

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Language Center 206

Symposium

Higher Education, Teaching and Teacher Education

The role of psychological flexibility in educational contexts

Keywords: Achievement, Attitudes and beliefs, Educational development, Educational policy, Higher education, Lifelong learning, Motivation and emotion, Pre-service teacher education, Social aspects of learning and teaching, Student learning, Teacher, Teaching/instruction, Workplace learning

Interest group: SIG 04 - Higher Education, SIG 11 - Teaching and Teacher Education

Chairperson: Henna Asikainen, University of Helsinki, Finland

Discussant: Telle Hailikari, Häme University of Applied Sciences, Finland

Psychological flexibility has emerged as an important determinant of wellbeing, and more research has noticed its' potential also in the educational settings as psychological flexibility offers an approach that can be learned and integrated into educational contexts (Arnold et al., 2022). This symposium examines the role of psychological flexibility across different educational contexts within higher education as well as teacher education including also principals who influence student and teacher wellbeing. First, we focus on the transition to university, exploring how psychological flexibility relates to university adjustment. Second, we present a review of psychological flexibility's role in higher education. Third, we evaluate a wellbeing intervention designed to enhance psychological flexibility among student teachers during their teacher training and fourth, we explore principals work passion profiles and their relation to psychological flexibility. Together, these contributions advance conceptual and practical understanding of psychological flexibility as a foundational capability in different educational contexts.

Finnish Principals' Work Passion Profiles and Associations with Psychological Flexibility

Presenting Author:Sanna-Mari Muta, University of Helsinki, Finland; **Co-Author:**Olli-Pekka Heinimäki, University of Helsinki, Finland; **Co-Author:**Hiroyuki Toyama, University of Helsinki, Finland; **Co-Author:**Katja Upadaya, University of Helsinki, Finland

As principals face growing demands to foster well-being in schools, their own personal resources become crucial. To that end, this study explored work passion profiles among Finnish principals using the dualistic model of passion including harmonious and obsessive forms of passion and their associations with psychological flexibility. Data from the Finnish Principal Barometer (N = 511) were analysed using latent profile analysis and multinomial logistic regression. Three profiles emerged: harmonious (65%), harmonious-dominant (25%), and harmonious-obsessive (10%). Higher psychological flexibility predicted membership in the harmonious profile rather than harmonious-dominant profile, while female principals were more likely to belong to the harmonious-obsessive profile than the harmonious. Findings suggest that psychological flexibility can particularly strengthen harmonious passion at work, highlighting its potential in interventions to enhance principals' occupational well-being.

A person-centred study of an ACT-based intervention for pre-service teachers' wellbeing and coping

Presenting Author:Ella Kämper, University of Helsinki, Finland; **Co-Author:**Kristiina Räihä, University of Helsinki, Finland; **Co-Author:**Veera Lampinen, University of Helsinki, Finland; **Co-Author:**Nina Katajavuori, University of Helsinki, Finland; **Co-Author:**Minna Huottilainen, University of Helsinki, Finland; **Co-Author:**Henna Asikainen, University of Helsinki, Finland

Acceptance and Commitment Therapy (ACT) interventions have demonstrated benefits for university students' and in-service teachers' well-being, yet their effects for pre-service teachers remain unexplored. As the transition into teaching and early practicum experiences can be highly stressful, preventive, curriculum-embedded support is needed in teacher education. Moreover, it is essential to understand how individuals experience such support and how interventions can be adapted to person-specific needs. This study addresses these gaps by evaluating a 7-week ACT-based online course taken concurrently with a teaching practicum, aiming to strengthen emotional competence through psychological flexibility. Outcomes are explored using a mixed-method, person-specific design combining pre-post measurements of well-being, self-compassion, and psychological flexibility along with seven weeks of daily ecological momentary assessment (EMA) and reflections. The preliminary findings are promising in showing how different individuals benefit from the intervention and apply it both in their personal and professional lives.

Psychological Flexibility as a Core Mechanism of First-Year Students' Academic Adjustment

Presenting Author:Coralie Manzoni, UCLouvain, Belgium; **Co-Author:**Isabel Raemdonck, Université Catholique de Louvain, Belgium; **Co-Author:**Henna Asikainen, University of Helsinki, Finland; **Co-Author:**Liesje Coertjens, Université catholique de Louvain (UCL), Belgium; **Co-Author:**Mikaël De Clercq, Université catholique de Louvain (UCL); Académie de Recherche et de l'Enseignement Supérieur (ARES), Belgium

The transition to university is a critical period often marked by emotional distress and academic difficulties. This presentation investigates the role of psychological flexibility in first-year students' academic adjustment. Based on 772 students from Belgian universities, structural equation modelling examined the direct and indirect roles of psychological flexibility on self-efficacy, academic pressure, cognitive processing, procrastination, and social integration. Results reveal that psychological flexibility has strong to medium positive link with self-efficacy, social integration, and cognitive processing, and negative effects on procrastination and academic pressure. These findings highlight psychological flexibility as a central psychological resource promoting adaptive adjustment during the transition to higher education. Implications for interventions fostering this skill to enhance student success and well-being are discussed.

Factors Associated with Psychological Flexibility in Higher Education Students: A Systematic Review

Presenting Author:Goshgar Mursalzade, University of Zaragoza, Spain; **Co-Author:**Sara Escriche-Martínez, University of Zaragoza, Spain; **Co-Author:**Sonsoles Valdivia-Salas, University of Zaragoza, Spain; **Co-Author:**Teresa I. Jiménez, University of Zaragoza, Spain; **Co-Author:**Ginesa López-Crespo, University of Zaragoza, Spain

This systematic review provides a comprehensive assessment of psychological flexibility (PF) factors among higher education students. In accordance with PRISMA guidelines, searches were conducted in the Web of Science and Scopus databases, covering the period from 2010 to 2023. Thirty-one studies that met the inclusion criteria were selected, and their findings were synthesized narratively. PF appears to be an important protective factor for students' mental health and academic adjustment. Higher PF is associated with improved well-being and successful adaptation to university life, as well as actions that align with one's values. Values typically mediate the relationship between mindfulness and PF. Conversely, PF shows negative associations with stress, anxiety, depression, burnout, and eating disorders. PF also acts as a mediator or moderator in various relationships (e.g., between academic emotions and learning speed). These findings suggest that PF significantly contributes to the well-being and academic success of higher education students.

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Language Center 204

Symposium

Teaching and Teacher Education

Building Inquiry-Oriented Teacher Identities Across Contexts and Career Stages

Keywords: Attitudes and beliefs, Communities of practice, Evidence-based teaching, Higher education, In-service teacher education, Practitioner research, Pre-service teacher education, Teacher education

Interest group: SIG 11 - Teaching and Teacher Education

Chairperson: Paula Mayoral Serrat, Ramon Llull University, Spain

Organiser: Eva Liesa, Ramon Llull University, Spain

Discussant: Auli Toom, University of Helsinki, Finland

This symposium examines how inquiry-oriented teacher identities develop across different stages of teacher education and in varied European contexts. The four contributions use quantitative and qualitative approaches to analyse how pre-service and in-service teachers engage with inquiry-based practices. The first paper presents the development and validation of a questionnaire assessing pre-service teachers' inquiry dispositions and traces their evolution during an inquiry-based practicum, highlighting the value of reflection and mentoring. The second investigates school-level enablers and obstacles that influence teachers' sustained engagement in inquiry. The third compares Spanish and Italian pre-service teachers' expectations, self-efficacy, and value orientations toward inquiry, revealing cross-national differences in anticipated practices. The fourth examines the emerging role of academically trained teachers in the Netherlands and the mismatch between their preparation and early-career realities. Together, these studies provide a multi-layered understanding of how institutional, cultural, and individual factors shape inquiry-oriented professionalism across Europe.

The role of inquiry-oriented teachers in the Netherlands

Presenting Author:Chevy van Dorresteyn, University of Amsterdam, Netherlands; **Presenting Author:**Jan Baan, Vrije Universiteit Amsterdam, Netherlands; **Co-Author:**Bente Van Nes, VU University Amsterdam, Netherlands

This is focused on the role of academically trained primary school teachers in the Netherlands and the misalignment between their expectations and early career realities. Academic teachers are trained to bring research skills and an inquiry-based approach into schools, yet many struggle to apply these competences in practice. Through interviews with five pre-service academic teachers, five beginning academic teachers, and six school board members, the study explores how this role is understood and supported. Results show that schools often lack awareness of the added value academic teachers offer, and formal structures to facilitate their role are largely absent. School leaders expect academic teachers to initiate discussions about their contributions, but many feel unprepared or hesitant to advocate for themselves. As this professional role is still emerging, clearer recognition, targeted support from school boards, and better preparation within teacher education are essential for its sustainable integration.

An inquiry-based practicum to promote an inquiry identity

Presenting Author:Eva Liesa, Ramon Llull University, Spain; **Presenting Author:**Paula Mayoral Serrat, Ramon Llull University, Spain; **Co-Author:**Natalia Contreras, Universitat Ramon Llull - Blanquerna, Spain; **Co-Author:**Auli Toom, University of Helsinki, Finland; **Co-Author:**Juan-José Mena Marcos, University of Salamanca, Spain

This paper presents an integrated study on the development of inquiry-oriented teacher identity in pre-service education. The research combines two sequential phases within the same project. In the first phase, a questionnaire was developed and validated to assess pre-service teachers' perceptions of self-efficacy,

attitudes, and values toward inquiry-based practices, based on data from 451 pre-service teachers across 13 Spanish universities. In the second phase, a longitudinal follow-up explored how these dispositions evolved during an inquiry-based practicum with 23 students. Drawing on qualitative data, this phase examined the processes underlying changes in students' conceptions of inquiry. Findings show that systematic reflection, peer collaboration, and mentor guidance were key to transforming students' conceptions of inquiry into more complex, research-informed understandings. Mentoring acted as a bridge between theory and practice, strengthening confidence and professional autonomy. Together, both phases demonstrate that inquiry-based teacher education enhances research competencies and consolidates inquiry-oriented professional identity.

Barriers and Facilitators in Schools for Developing Inquiry-Oriented Practices

Presenting Author:Paula Mayoral Serrat, Ramon Llull University, Spain; **Presenting Author:**Eva Liesa, Ramon Llull University, Spain; **Co-Author:**Montserrat Alguacil, Ramon Llull University, Spain

This study explores how primary teachers engage with research in their classrooms. It distinguishes between inquiry-oriented teachers, who actively incorporate research-based practices, and non-inquiry teachers, who engage sporadically. Through 44 interviews conducted in 2023–24, we identified inquiry-oriented teachers and non-inquiry-oriented teachers, and the enablers and barriers at both the individual and organisational levels. While supportive leadership and dedicated collaborative inquiry time are common, they are often insufficient due to time constraints, causing many to view research as an optional extra. Inquiry-oriented teachers showed greater ownership and confidence in using evidence, fostering iterative improvement cycles. In contrast, non-inquiry teachers faced challenges with transferring knowledge and were sceptical of research. We recommend four key steps: institutionalise protected PLC time, enhance teacher ownership of projects, facilitate plain-language research partnerships, and develop local research literacy. These steps can help establish sustainable inquiry routines and promote evidence-informed practices among more teachers.

Pre-service Teachers' Expectations for Inquiry-Oriented Practice in Spain and Italy

Presenting Author:Eva Liesa, Ramon Llull University, Spain; **Co-Author:**Maria Beatrice Ligorio, University Bary, Italy; **Co-Author:**Paula Mayoral Serrat, Ramon Llull University, Spain; **Co-Author:**Natalia Contreras, Universitat Ramon Llull - Blanquerna, Spain

This study examines how pre-service teachers in Italy and Spain anticipate engaging in different forms of inquiry, the affective and cognitive value they assign to inquiry-based teaching, and their perceived self-efficacy. A total of 682 participants completed the TI-Pre survey, which assessed three forms of inquiry—systematic reflection, using research, and conducting research—along with beliefs about inquiry. Findings indicate that systematic reflection is the most frequently anticipated practice in both countries, followed by using research, with Italian students reporting higher expected use. Conducting research is the least anticipated form, although Italians again score higher. Regarding beliefs, affective value is the highest-rated dimension, followed by cognitive value. Self-efficacy emerges as the weakest dimension, especially in Italy. Overall, the results highlight the need for curriculum designs that more effectively integrate research, reflection, and practice to foster stronger inquiry-oriented identities among future teachers.

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Main Building U4080

Single Paper

Higher Education, Teaching and Teacher Education

Single Paper paper_type_1 session 25

Keywords: Achievement, AI in higher education, Artificial intelligence, Collaborative learning, Competence development, Digital transformation, Experimental studies, Knowledge creation, Mixed methods, Qualitative methods, Teaching/instruction, Writing/literacy

Interest group: SIG 04 - Higher Education, SIG 11 - Teaching and Teacher Education

Chairperson: Telle Hailikari, Häme University of Applied Sciences, Finland

Investigating Teacher AI Competence: Tests of Measurement Invariance and Latent Mean Differences

Keywords: AI in higher education, Artificial intelligence, Competence development, Digital transformation

Presenting Author:Yanfen Chen, University of Erlangen-Nuremberg, Germany; **Co-Author:**Michaela Gläser-Zikuda, University of Erlangen-Nürnberg, Institute for Educational Science, Germany

As Artificial Intelligence (AI) rapidly reshapes teacher education, validated instruments assessing K-12 teachers' AI competence remain scarce in non-Western contexts. This study validated the Teachers Artificial Intelligence Competence Self-efficacy (TAICS) scale among K-12 pre- and in-service teachers in Mainland China. Employing Exploratory Factor Analysis (EFA), Confirmatory Factor Analysis (CFA), and Exploratory Structural Equation Modeling (ESEM), we confirmed a robust six-factor, 23-item structure, with one AI assessment item removed due to divergent assessment culture. Crucially, measurement invariance (configural, metric, and scalar) was established across two cohorts and latent mean analysis revealed that pre-service teachers significantly surpassed in-service teachers across all dimensions, particularly in AI pedagogy, AI knowledge, and AI assessment. This study enriches the empirical foundation of the UNESCO *AI Competence Framework for Teachers* within the Sinosphere and provides a psychometrically sound assessment tool for comparative research in the Global South and non-English speaking regions.

Fostering Epistemic Agency in Higher Education through Reflective genAI-Supported Writing

Keywords: AI in higher education, Knowledge creation, Qualitative methods, Writing/literacy

Presenting Author:Nina Isabella Schnatz, Zurich University of Applied Sciences (ZHAW), Switzerland

The growing presence of generative AI (genAI) in education transforms how knowledge is produced and evaluated. In higher education, this shift particularly affects academic writing, where genAI tools can both support and challenge students' epistemic responsibility. This study presents a reflective writing design implemented in an undergraduate engineering course at the Zurich University of Applied Sciences (ZHAW). Students used structured prompting journals to document and reflect on their interaction with genAI across different writing stages. One hundred fifty journals from the spring 2025 iteration will be analysed using qualitative content analysis, drawing on concepts of epistemic agency and media competence. The study examines how students evaluate, adapt, or reject genAI output as part of their epistemic reasoning. Expected findings will inform design principles for AI-integrated writing pedagogy and illustrate how reflective genAI-supported writing can foster epistemic agency and integrity in higher education.

Student-Generated Questioning and AI: Does AI-Supported Distractor Construction Affect Learning?

Keywords: Achievement, AI in higher education, Experimental studies, Teaching/instruction

Presenting Author:Natalie Enders, Universität Hildesheim, Germany; **Co-Author:**Florian Klapproth, Medical School Berlin, Germany

The student-generated questioning technique consists of content selection, answer identification, and distractor generation for closed questions. Empirical findings highlight the importance of scaffolding for high-quality distractors and lasting learning. Therefore, this study investigates distractor generation to assess its effect on university students' knowledge acquisition, independent of the other steps. During winter semester 2025/26, $N=77$ psychology students generated distractors for preselected question stems in a lecture. A balanced cross-over design provided all students with algorithmic support and, in alternating phases, with or without additional AI support. Measures included prior knowledge, goal orientation, AI competence, cognitive level of the questions, and knowledge acquisition. Preliminary results indicate a homogeneous sample with moderate goal orientations, high AI competence, and low baseline knowledge. Post-test data (January 2026) will assess whether AI-assisted distractor generation has differential effects on students' learning, whether effects differ by cognitive level, and whether individual differences or sequence effects moderate learning outcomes.

Co-creation characteristics in AI hybrid space: entangled interactions

Keywords: AI in higher education, Collaborative learning, Knowledge creation, Mixed methods

Presenting Author:Hanni Muukkonen, University of Oulu, Finland; **Co-Author:**Anni silvola, University of Oulu, Finland; **Co-Author:**Crina Damsa, University of Oslo, Norway; **Co-Author:**Anceli Kaveri, University of Oulu, Finland; **Co-Author:**Egle Gedrimiene, University of Oulu, Finland

This research examines collaborative settings, where students work in small groups to resolve different types of problem scenarios and are advised to consult a GenAI conversational agent (CA) during their work. We analysed co-creation from three perspectives a) as individual human-AI interaction in form of the prompting and resources for new ideas and directions, b) group collaboration to evaluate, challenge, negotiate, and build on the GenAI outcomes, and c) the more extended, entangled interactions in hybrid space and how it feeds into emergent solutions and shared understanding in the groups. Combined video and chat-log data were analysed involving 13 students. The data characterizes these entangled interactions in hybrid space and discusses the implications for HE from a postdigital literacy framing.

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10 June 2026 16:00 - 17:30
Porthania P617
Single Paper
Lifelong Learning, Teaching and Teacher Education

Single Paper paper_type_1 session 4

Keywords: Attitudes and beliefs, In-service teacher education, Informal learning, Motivation, Out-of-school learning, Qualitative methods, Self-efficacy, Special education, Teacher, Teacher effectiveness, Teaching/instruction, Workplace learning

Interest group: SIG 11 - Teaching and Teacher Education

Chairperson: Orna Levin, Achva Academic College, Israel

The Impact of Role on Learning in Reciprocal Mentoring Conversations Between Pre-Service Teachers

Keywords: Collaborative learning, Peer interaction, Pre-service teacher education, Reflection

Presenting Author: Roni Jutkowitz, Herzog College, The Hebrew University of Jerusalem, Israel; **Co-Author:** Yaron Lehavi, David Yellin Teachers' College, Israel; **Co-Author:** Avraham Merzel, The Hebrew University of Jerusalem, Israel

This study explores how mentoring roles are connected to perceived learning in reciprocal peer mentoring interactions. Forty-nine preservice mathematics teachers participated in a peer-mentoring course, alternating between mentor and mentee roles. They were guided to explore the lesson rather than to evaluate one another. By analyzing participants' post-conversation reflections, we examined learning experiences across roles using two complementary analyses: comparing mentors and mentees within the same conversation and comparing the same participant across roles. Findings reveal that mentors reported more learning experiences than mentees and demonstrated greater ability to generalize beyond specific cases to broader pedagogical insights and to reference the disciplinary structure. Mentees focused more on professional beliefs and validating existing practices. These patterns align with the protégé effect and suggest that reciprocal peer mentoring models grounded in curiosity-driven discourse can promote meaningful professional development for all participants, with learning occurring in both roles but in distinct ways.

Fostering Student Creativity: The Role of the Effective School Leader and Culture

Keywords: Attitudes and beliefs, Motivation, Teacher effectiveness, Workplace learning

Presenting Author: Alexander Zibenberg, Tel-Hai Academic College, Israel; **Co-Author:** Rimaa Da'as, The Hebrew University of Jerusalem, Israel

Numerous studies have examined the factors that enable teachers to foster creativity in the classroom. This study integrates Implicit Leadership Theory (ILT), creativity theories, and school culture frameworks to propose a model linking school culture to teachers' creativity-fostering behavior. Specifically, it explores the mediating role of ILT in the relationship between school culture and teachers' creativity-fostering behavior, and the moderating role of teachers' seniority in education. Data were collected from 456 teachers across various schools. The findings reveal a dynamic interplay between cognitive and environmental factors in shaping teachers' ability to nurture creativity. Teachers do not necessarily need to be inherently creative; rather, working in a school culture that values creative thinking and upholds a positive ideal of school leadership enhances their capacity to cultivate creativity among students.

The Narrative Identity of Nonformal Educators as Shaped in Their Professional Stories

Keywords: Attitudes and beliefs, Informal learning, Out-of-school learning, Qualitative methods

Presenting Author: Tamar Milstein, Ben Gurion University and Kaye College, Israel; **Co-Author:** Dana Vedder-Weiss, Ben-Gurion University of the Negev, Israel

This research addresses a significant gap in educational research: while teacher identity has been extensively studied, nonformal educators' identity remains largely unexplored. Adopting a narrative approach that views identity as a collection of self-stories, this study examines how 20 youth workers with at least five years of experience shape their narrative identity through professional stories. Using in-depth interviews and a center-marginal analytical framework, the findings reveal a paradoxical dual identity. All participants expressed centrality through high self-worth, characterized by a sense of deep impact, perceiving their work as daily "rescue" of youth, blurring work-life boundaries, and positioning themselves in contrast to formal education. However, most (16 of 20) also experienced marginality through external perspectives that view nonformal education (NFE) as unclear, unimportant, and insufficiently rewarding financially and professionally. To address high workforce turnover, the study recommends clearly defining NFE, publicly highlighting its value, and improving compensation.

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10 June 2026 16:00 - 17:30
Porthania P668
Single Paper
Higher Education, Motivational, Social and Affective Processes

Single Paper paper_type_1 session 27

Keywords: Attitudes and beliefs, Educational development, Engineering, Experimental studies, Higher education, Mathematics, Qualitative methods, Sustainability, Teacher professional development

Interest group: SIG 04 - Higher Education

Chairperson: Essi Ryymin, Häme University of Applied Sciences, Finland

Replication of Avatar Gender Effect on Math Performance through the Proteus Effect

Keywords: Attitudes and beliefs, Experimental studies, Higher education, Mathematics

Presenting Author: Clara Pascal, Université Marie et Louis Pasteur, France; **Co-Author:** Benjamin Le Hénaff, Université Marie et Louis Pasteur, France; **Co-Author:** Florent Lheureux, Université Marie et Louis Pasteur, France

Stereotype threat can impair performance of individuals targeted by negative stereotypes, which is often observed in mathematics, where women, stereotypically viewed as less competent, tend to underperform. Conversely, stereotype lift may advantage those not targeted by negative stereotypes. Consequently, recent research has examined whether avatars in virtual environments can mitigate these effects using stereotype lift. Lee et al. (2014) reported that participants represented by male avatars performed better than those with female avatars on arithmetic tasks, regardless of their own gender. The goal of the present study was to replicate this finding. Participants, represented by either a male or female avatar, completed a competitive or cooperative task. We hypothesized that avatar gender would influence performance, with motivation as a mediator. However, our results did not replicate Lee et al.'s effect, revealing only a marginal, non-significant three-way interaction between avatar gender, participant gender, and task context. Results and limitations are discussed.

Experts' Perspectives on Myths in Sustainability Education: A Podcast-based Interview Study

Keywords: Attitudes and beliefs, Higher education, Qualitative methods, Sustainability

Presenting Author: Stefan T. Siegel, University of St.Gallen, Switzerland

Sustainability education (SE) is vital for fostering integrative thinking and responsible action but is hindered by myths that shape perceptions of SE's purpose, scope, and methods. This study explores the emerging field of myths in sustainability education (MYTHSE), examining their characteristics, causes, consequences, and strategies for addressing them. A pre-registered interview study was conducted including seven international experts in sustainability

education, cognitive psychology, and misinformation research, using semi-structured, podcast-based interviews. Data were analyzed through qualitative content analysis. Findings reveal diverse expert perspectives on MYTHSE, highlighting common myths such as equating SE with environmental education or assuming factual knowledge alone drives behavioral change. Causes include cognitive biases and cultural narratives, with detrimental consequences like perpetuating ineffective teaching practices. Experts emphasized the need for strategies beyond myth debunking, advocating for prebunking. This study underscores the importance of addressing MYTHSE as a dedicated research agenda and calls for more research and evidence-informed practices.

Institutional Drivers to Educators' Sustainability Literacy in Engineering Education

Keywords: Engineering, Higher education, Sustainability, Teacher professional development

Presenting Author:Caroline Vonk, Eindhoven University of Technology, Netherlands; **Co-Author:**Valentina Tassone, Wageningen University, Netherlands; **Co-Author:**Esther Ventura-Medina, Eindhoven University of Technology, Netherlands

This study examines how institutional initiatives shape sustainability literacy among educators in Higher Engineering Education Institutions (HEEIs). Grounded in Sterling's [9] concept of "change in education" and the maturity model for sustainability in higher education by Pizzutilo & Venezia [6], the research explores shaping conditions for professional development (PD) at an institutional level across four technical universities. Using a qualitative approach including focus groups, the study reveals that institutional culture legitimizes sustainability efforts, while departmental autonomy leads to diverse implementation of sustainability into education. Educator engagement is often driven by bottom-up initiatives, with limited institutional recognition. The findings highlight the need for explicit PD activities that support educators in embedding sustainability into their teaching. By connecting systemic relations shaping educator literacy this work offers insights into advancing sustainability integration through reflective and systemic innovation in HEEIs.

Sustainability Education 101: Designing, Implementing, and Evaluating an Online Development Course

Keywords: Educational development, Higher education, Sustainability, Teacher professional development

Presenting Author:Stefan T. Siegel, University of St.Gallen, Switzerland; **Co-Author:**Bernadette Dilger, University of St.Gallen, Switzerland

Higher education increasingly expects instructors to embed sustainability in their teaching, yet many struggle with conceptual ambiguity, guidance, and resource constraints (Sterling, 2024; Macintyre et al., 2025). This study reports findings from the design, implementation, and evaluation of *Sustainability Education 101* (SE101), a 8h-self-paced online academic development course. Grounded in emancipatory learning, transfer orientation, and critically reflective practice, SE101 introduces sustainability frameworks and didactic models and asks participants to develop a sustainability-enhanced course prototype. The evaluation centers on two questions: (1) which design elements participants experienced as supportive or challenging, and (2) how they applied SE101's tools to redesign their courses in their own disciplinary contexts. Results ($N=18$) show that the design canvas, pattern navigator, and modular format most strongly supported learning, while cognitive load and institutional constraints impeded implementation. Participants broadened their sustainability conceptions, constructively aligned their course prototypes, and identified discipline-specific entry points. Limitations and implications are discussed.

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Main Building, U4075

Single Paper

Higher Education

Single Paper paper_type_1 session 20

Keywords: Assessment methods and tools, Competences, Developmental processes, Higher education, Motivation and emotion, Quantitative methods, Survey research, Teacher, Teaching/instruction

Interest group: SIG 04 - Higher Education

Chairperson: Heidi Hyttinen, University of Eastern Finland, Finland

Teachers' perceptions of generic skills -Do methods, pedagogical practices, and training matter?

Keywords: Competences, Higher education, Teacher, Teaching/instruction

Presenting Author:Tarja Tuononen, University of Helsinki, Finland; **Co-Author:**Heidi Hyttinen, University of Eastern Finland, Finland; **Co-Author:**Katri Kleemola, University of Helsinki, Finland; **Co-Author:**Telle Hailikari, Häme University of Applied Sciences, Finland; **Co-Author:**Auli Toom, University of Helsinki, Finland

Learning generic skills is a key aim of higher education, and teachers play a crucial role in facilitating this process. This study examines the relationships between higher education teachers' perceptions of students' learning of generic skills and their teaching methods, pedagogical practices, and pedagogical training. An online questionnaire was completed by 286 teachers, and data analyses included Pearson's correlations, linear regression, and one-way ANOVA. The results showed seminars were positively related to perceptions of students' critical thinking skills, while lectures were negatively related to perceptions of communication and collaboration skills. Additionally, teachers' pedagogical training was positively related to perceptions of students' development of collaboration, digital technology, and self-regulation skills. The findings suggest that teachers' perceptions of generic skills influence their pedagogical choices, highlighting the importance of adequate pedagogical knowledge and skills to effectively support students in developing generic skills.

Teacher feedback literacy as an emerging field: A scoping review

Keywords: Assessment methods and tools, Developmental processes, Higher education, Teaching/instruction

Presenting Author:Turkan ISTENCIOGLU, Deakin University, Australia; **Co-Author:**David Boud, Deakin University/University of Technology Sydney, Australia; **Co-Author:**Phillip Dawson, Deakin University, Australia; **Co-Author:**Lan Yang, The Education University of Hong Kong, Hong Kong

Effective feedback is central to student learning, yet its impact heavily depends on teachers' ability to design, deliver, and sustain meaningful feedback practices. Teacher feedback literacy (TFL) is increasingly recognised as a key driver of student feedback literacy, but research remains fragmented, with varied conceptualisations and measurement approaches. This scoping review maps the current state of TFL in higher education by examining how it has been conceptualised, assessed, and developed. Findings demonstrate that TFL is mainly recognized as a multi-faceted, improvable, relational, and situated capacity. Although TFL has been assessed in diverse ways, most studies rely on qualitative methods and draw on established frameworks for interpretation. TFL can be developed through ongoing, contextually situated, reflective practices and targeted training. However, existing empirical work is geographically and disciplinarily narrow and largely concentrated on micro-level practices. Clearer conceptualisations, more varied study designs, and broader contexts are needed to advance TFL scholarship.

Teachers' Appraisals, Emotional Arousal and Coping Experiences in Teaching Situations

Keywords: Higher education, Motivation and emotion, Teacher, Teaching/instruction

Presenting Author:Laura Pylväs, University of Helsinki, Finland; **Presenting Author:**Ilmari Puhakka, Tampere University, Finland; **Co-Author:**Petri Nokelainen, Tampere University, Finland; **Co-Author:**Liisa Postareff, HAMK University of Applied Sciences, Finland; **Co-Author:**Anna Wallin, Tampere University, Finland; **Co-Author:**Anna Parpala, University of Helsinki, Finland

This study examined how higher education (HE) teachers' appraisals of control and competence and emotional arousal before teaching situation, and physiological arousal during teaching situation, relate to their perceptions of coping (RQ1) and cognitive challenges (RQ2) in the teaching situation. The study involved 59 Finnish HE teachers who reported 185 teaching situations in a longitudinal data collection in 2023, yielding a high-density dataset of repeated self-assessments and over 5,695 hours of continuous electrodermal activity (EDA) across real-life teaching events. The results showed that teachers' positive coping expectancies were associated with better perceived coping, both within and between teachers. Higher levels of EDA toward the end of the teaching session also predicted better perceived coping. Positive self-evaluations of control over study content and pedagogy, and perceived competence, were associated with fewer cognitive challenges. However, positive coping expectancies also predicted more cognitive challenges, suggesting possible overconfidence or demand mismatch.

Teaching Profiles and Teachers' Perceptions of Students Learning Generic Skills

Keywords: Higher education, Quantitative methods, Survey research, Teacher

Presenting Author:Tarja Tuononen, University of Helsinki, Finland; **Co-Author:**Natia Bendeliani, Eötvös Loránd University, Hungary

Teachers' approaches to teaching, reflecting the interaction between their pedagogical intentions and strategies, have been widely studied, yet rarely in relation to the teaching of generic skills. This study addresses this gap by exploring higher education teachers' approaches to teaching and their perceptions of students' learning of generic skills. Using the HEAT instrument, originally developed in a Finnish university context, the research examined its applicability in Hungarian higher education, where studies on this topic remain limited. Data from 221 university teachers were analysed through correlations, cluster analysis, Chi-square tests, and ANOVA. Three profiles emerged, interactive-organized, transmissive, and mixed, each linked to distinct perceptions of how students develop skills such as critical thinking, collaboration, and self-regulation. The study extends the cross-national validity of the HEAT instrument and highlights the value of

sharing insights across educational contexts to strengthen understanding of teaching and learning generic skills.

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10 June 2026 16:00 - 17:30

Porthania P723

Single Paper

Higher Education, Motivational, Social and Affective Processes, Teaching and Teacher Education

Single Paper paper_type_1 session 6

Keywords: AI in higher education, Competences, Mathematics, Motivation, Professional development interventions, Self-efficacy, Social interaction, Survey research, Teacher, Teacher effectiveness, Teacher professional development

Interest group: SIG 04 - Higher Education, SIG 11 - Teaching and Teacher Education

Chairperson: Sirkku Lähdesmäki, University of Eastern Finland, Finland

What shapes AI pedagogy? Factors determining university teachers' innovative use of AI in teaching

Keywords: AI in higher education, Motivation, Self-efficacy, Teacher professional development

Presenting Author: Sirkku Lähdesmäki, University of Eastern Finland, Finland; **Co-Author:** Heidi Hyytinen, University of Eastern Finland, Finland

Although the rapid development of artificial intelligence (AI) poses challenges for university teachers, research on this topic remains scarce. This study examines interconnections between teachers' self-efficacy for using AI in teaching, intrinsic motivation, behavioral commitment, and views on educational use of AI, as well as how AI training relates to these aspects. The guiding research question is: What factors influence university teachers' innovative implementation of AI in their teaching practices? Data from 90 teachers' survey responses and open-ended answers were analyzed using quantitative (correlations, t-test, ANOVA) and qualitative thematic analysis. Results showed positive connections between self-efficacy, intrinsic motivation, and behavioral commitment. Teachers with AI training reported higher self-efficacy, motivation, and commitment and identified more possibilities for AI use than those without training. Moreover, findings emphasized that self-efficacy beliefs were strongly associated with innovative educational AI use, highlighting their role in shaping adoption and integration of AI in teaching.

What Drives Interest in Teaching? Evidence from Young People in England and Wales

Keywords: Motivation, Self-efficacy, Social interaction, Survey research

Presenting Author: Sophie Thompson-Lee, University of Oxford, United Kingdom; **Co-Author:** Rebecca Snell, University of Oxford, Norham Gardens, United Kingdom; **Co-Author:** Robert Klassen, University of Oxford, United Kingdom

Teacher shortages present a significant challenge worldwide, exacerbated by lack of interest in teaching careers resulting in falling enrolments in initial teacher education (ITE) programmes. In the current study, we used a modified version of the Motivations for Career Choice Scale (MCC; Watt et al., in press) to investigate the influences on interest in teaching with young people prior to entering the workforce. A total of 672 16–19-year-olds across England and Wales were asked about their interest in teaching, their self-efficacy for teaching, their perceived fit with teaching (PV fit). They were also asked about social influences (friends and family) and previous learning experiences. We found that that self-efficacy and perceived PV fit are key drivers of young people's interest in teaching, with positive learning experiences and social influences enhancing self-efficacy, perceived fit, and ultimately interest in the profession.

Teachers' Self-efficacy and Job Satisfaction: Quality of Cooperation as a Mediating Variable

Keywords: Competences, Mathematics, Self-efficacy, Teacher

Presenting Author: Nevenka Maras, Faculty of Teacher Education, University of Zagreb, Croatia; **Co-Author:** Borna Nemet, University of Nevada, Las Vegas, Croatia; **Co-Author:** Ruzica Soldo, Mechanical engineering school Fausta Vrančića, Croatia; **Co-Author:** Ivancica Grubisic, -, Croatia

This study examined how self-efficacy, cooperation quality, and job satisfaction relate among 500 Croatian primary school mathematics teachers, and whether cooperation mediates these relationships. Hierarchical regression analyses showed that self-efficacy initially predicted job satisfaction, but this effect disappeared once cooperation was added, indicating full mediation. Teachers who experienced higher-quality collaboration reported greater satisfaction, demonstrating that cooperative professional environments strengthen the link between confidence and workplace well-being. The findings underline the importance of fostering supportive, collaborative school cultures and enhancing teachers' self-efficacy to improve retention, strengthen instructional practice, and ultimately contribute to better student outcomes in mathematics and greater interest in STEM fields among pupils.

Pedagogical Change and Teacher Self-Efficacy: A Collaborative STEAM Professional Development

Keywords: Professional development interventions, Self-efficacy, Teacher effectiveness, Teacher professional development

Presenting Author: Juliana Abra-Olivato, EDUNOVA.ISPA - Interdisciplinary Research Centre in Education, Portugal; **Co-Author:** José Castro Silva, ISPA-Instituto Universitário, Portugal; **Co-Author:** Nadia Ferreira, EDUNOVA.ISPA - Interdisciplinary Research Center in Education, Portugal

This paper presents preliminary results of an action-research-based professional development program (PDP) on STEAM education, implemented with 18 primary school teachers in Portugal. Over 50 hours, the PDP supported collaborative planning, peer feedback, and implementation of interdisciplinary projects integrating arts and sciences. Mixed-methods data (qualitative reflections, interviews, STEAM action plans, and self-efficacy surveys) indicate significant changes in three domains: teacher collaboration, pedagogical innovation, and increased self-efficacy—particularly in integrating STEAM and student-centered practices. The program fostered authentic professional learning communities through sustained dialogue and shared agency. The findings suggest that context-sensitive PDPs can promote pedagogical transformation and teacher efficacy. In light of Portugal's aging teaching workforce, teacher shortages, and rising classroom diversity, we argue for policy initiatives that expand collaborative PDPs, strengthen school-university partnerships, and support teacher leadership. These outcomes have implications for researchers, school leaders, and education stakeholders committed to equity-oriented and innovative professional development.

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10 June 2026 16:00 - 17:30

Porthania P724

Single Paper

Motivational, Social and Affective Processes, Teaching and Teacher Education

Single Paper paper_type_1 session 16

Keywords: Attitudes and beliefs, Case studies, Developmental processes, Educational development, Motivation and emotion, Qualitative methods, Secondary education, Social aspects of learning and teaching, Social sciences, Teacher professional development

Interest group: SIG 11 - Teaching and Teacher Education, SIG 18 - Educational Effectiveness and Improvement

Chairperson: Renata Anna Dezso, Hungary

Motivational and Relational Resources for Well-Being in Schools: Insights from Teachers and Students

Keywords: Attitudes and beliefs, Motivation and emotion, Secondary education, Teacher professional development

Presenting Author: Sandra Hans, Universität Freiburg, Germany; **Co-Author:** Tamar Voss, University of Freiburg, Germany

Teacher and student well-being are key prerequisites for effective teaching and learning, yet both groups face increasing psychological strain. Therefore, we investigated how motivational and relational factors contribute to well-being in two German schools with diverse, high-need populations. Parallel surveys were conducted among teachers ($N = 62$) and students ($N = 172$). Regression analyses revealed that higher teacher enthusiasm and inclusive attitudes significantly predicted job satisfaction, while lower enthusiasm was linked to increased emotional exhaustion. For students, supportive teacher-student relationships and clear classroom structures were linked to higher well-being. Cluster analysis revealed three groups (satisfied, ambivalent, stressed) that differed by grade level but not by gender, socioeconomic status, or migration background. Findings highlight motivational and relational processes as ways to promote well-being in challenging school contexts.

"I have no Drop of Pain for them!": Emotional Labour in Teachers' Discourse about Parents

Keywords: Case studies, Motivation and emotion, Social aspects of learning and teaching, Teacher professional development

Presenting Author: Dana Vedder-Weiss, Ben-Gurion University of the Negev, Israel; **Co-Author:** Idit Fast, Ben Gurion University of the Negev, Israel

This study examines how teachers express and negotiate emotional labour demands in professional development (PD) discussions about parent-teacher conflicts. Drawing on Hochschild's (1983) critical theory of emotional labour, we analyse a case study of teachers' discourse in a year-long PD program in a

public elementary school. Teachers debated whether to suppress anger, act indifferent, or develop empathy as they navigated complex relationships with parents. Findings reveal tensions between emotional self-regulation as a marker of professionalism and as a strategy for self-preservation. Teachers both resisted and reinforced emotional labour expectations. We argue that PD can be a site for critical reflection on teachers' emotional labour and call for developing PD that supports open, humanizing discussions of emotional labour in teaching.

From teacher to change agent: four potential roles after teacher professionalization

Keywords: Case studies, Educational development, Qualitative methods, Teacher professional development

Presenting Author: Tamara van Woezik, Radboud University Nijmegen, Netherlands; **Co-Author:** Martina van Uum, Radboud Teachers Academy, Netherlands;

Co-Author: Amber Walraven, Radboud Teachers Academy, Netherlands

Professional development currently often focuses on development of knowledge of individual teachers. Both teachers and school management are not always aware that professional development can be a way for teachers to develop into a leadership role. We therefore explore the potential roles that teachers adopt after following a teacher professionalization course. We use semi-structured interviews at T1 after 2-4 months and T2 after 18 months. We identified four roles in the interviews with the teachers: 1) teacher; 2) innovator; 3) knowledge broker; 4) change agent. Most teachers initially wanted to focus on their own lessons and updated their own materials, sometimes in collaboration with colleagues and taking on a knowledge broker role. After more time had passed more teachers actively engaged in a knowledge broker role. We advise to explicitly incorporate teacher leadership strategies into teacher professionalization programs to equip teachers to transfer their knowledge into the school context.

Research-based Reflective Innovation: The Implementation Process of the AES-Tyrol

Keywords: Case studies, Developmental processes, Educational development, Social sciences

Presenting Author: Selina Silian, University of Innsbruck, Austria; **Co-Author:** Sabrina Bacher, University of Innsbruck, Austria, Austria; **Co-Author:** Christian

Kraler, Teacher Education and School Research, Austria; **Co-Author:** Claudia Schreiner, University of Innsbruck, Austria

This presentation explores the potential of research-based reflective innovation through the case study of the Accredited European School Tyrol (AES-Tyrol). It addresses two dimensions: (1) the implementation of a new school system with innovative potential for the Austrian education sector, and (2) the role of the accompanying research of this implementation as an autonomous support mechanism. As part of the scientific support, documents related to the implementation were analysed, and 28 interviews with stakeholders were conducted. The data analysis made it possible to identify both conditions for success and challenges within the process. In addition, a two-dimensional timeline was created, capturing social, legislative, and organisational developments. To facilitate reflection on the school's future development, the evidence-based findings are systematically fed back to the actors involved in the project. Thus, the example of AES-Tyrol illustrates how accompanying research can foster quality-assured innovation in school development by integrating empirical insight, and systematic reflection.

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Language Center 207

Single Paper

Learning and Instructional Technology, Teaching and Teacher Education

Single Paper paper_type_1 session 12

Keywords: Attitudes and beliefs, Digital transformation, Diversity, Evidence-based teaching, Informal learning, Practitioner research, Quantitative methods, Research-based teaching, Teacher education, Technology

Interest group: SIG 11 - Teaching and Teacher Education

Chairperson: Mikaël De Clercq, Belgium

Exploring patterns of change in attitudes towards research of teachers as postgraduate students

Keywords: Attitudes and beliefs, Practitioner research, Research-based teaching, Teacher education

Presenting Author: Maria Vrikki, University of Limassol, Cyprus; **Co-Author:** Ioulia Televantou, European University Cyprus, Cyprus; **Co-Author:** Elena Papanastasiou, University of Nicosia, Cyprus

This paper addresses the need to cultivate teachers' research-oriented mindsets to help them navigate through increasing classroom complexities and problems. Focusing on teacher education as a pivotal stage for teachers to shape their attitudes towards research, we measured the attitudes of 549 postgraduate education students at three time points during the semester, using the Revised Attitudes Towards Research Scale (Authors, 2014). Quantitative analysis showed rising research anxiety alongside declining perceptions of usefulness and positive predispositions. At the same time, no predictor background or motivational variable was statistically significant in explaining any of the slope factors for the outcome variables. These findings suggest that, in their current form, research methods courses may unintentionally foster negative attitudes toward research. To counter this trend, course leaders might integrate innovative elements—such as structured group work or collaborative inquiry—to reduce anxiety and enhance the perceived value of research.

Evidence on Demand: (Future) Teachers' Expectations of Eight Media Sources

Keywords: Attitudes and beliefs, Evidence-based teaching, Informal learning, Teacher education

Presenting Author: Linda Schirle, University of Stuttgart, Germany; **Co-Author:** Christine Sälzer, University of Stuttgart, Germany

Despite the steadily growing interest in evidence-informed teaching, the processes through which teachers discover and select educational evidence remain insufficiently understood. Prior research has focused primarily on barriers, beliefs and attitudes toward differently generated knowledge, while the role of specific communication media has received comparatively little attention. The present study therefore investigates eight types of media sources by examining teachers' familiarity with them, their expectations of finding useful evidence, and their self-reported use. In-service and pre-service teachers in one German federal state were surveyed digitally at multiple measurement points during the 2024/2025 school year. The results offer differentiated insights into how (future) teachers navigate the expanding landscape of educational information, and whether expectations and usage of certain media sources relate to their attitudes toward evidence-informed teaching. By highlighting these patterns, the study contributes to a more nuanced understanding of how teachers access and value educational evidence in practice.

Development and Validation of the Teachers' Digital Educational Equity Mindset (DEEM) Scale

Keywords: Attitudes and beliefs, Digital transformation, Quantitative methods, Teacher education

Presenting Author: Tobias M. Schifferle, Zurich University of Teacher Education, Switzerland; **Co-Author:** Leonie Sibley, Zurich University of Teacher Education, Switzerland; **Co-Author:** Barbara Getto, Zurich University of Teacher Education, Switzerland

As digitization reshapes education, it risks reinforcing existing social inequalities unless teachers possess the mindset to actively mitigate these disparities. While general equity mindsets have been studied, a specific framework for the digital domain has been lacking. This study introduces and validates the Digital Educational Equity Mindset (DEEM), conceptualizing DEEM as a pre-decisional mindset essential for equitable teaching practices. Through a rigorous multi-step validation process involving independent EFA ($n=299$) and CFA ($n=280$) studies with educators from the UK and US, we established a robust 18-item scale to assess DEEM. Psychometric analyses, including second-order CFA and Bayesian SEM comparison, confirmed DEEM as a single, reliable construct ($\omega_{\text{total}} = .96$). Strong correlations with Social Justice Attitudes and TPACK confirmed convergent validity. By moving digital equity from abstract theory to concrete measurement, the DEEM scale offers a critical tool for future research, teacher education, and the fostering of a more equitable digital future.

Exploring pre-service teachers' digital competence belief profiles

Keywords: Attitudes and beliefs, Diversity, Teacher education, Technology

Presenting Author: Charlott Rubach, University Rostock, Germany; **Co-Author:** Anne-Kathrin Hirsch, University of Rostock, Germany

Basic digital competence beliefs are assumed to be foundational for the development of professional digital competence (Krumsvik, 2011). Prior research shows that both domains are heterogeneously developed among pre-service teachers (Authors, 2019; Schmid et al., 2021). Yet little is known about how these domains co-exist, limiting our understanding of whether teacher education should foster both domains equally or prioritize professional digital competence. Using data from 563 pre-service teachers, we conducted latent profile analyses across five subscales to examine how basic and professional competence beliefs co-exist. Five profiles emerged, ranging from globally low to consistently high levels, as well as several mixed profiles. The profiles differed by gender and by prior experiences in digital education. Overall, the findings highlight the heterogeneity of pre-service teachers' digital competence beliefs and underscore opportunities for tailoring learning experiences in teacher education to different learner groups.

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Symposium
Teaching and Teacher Education

Seeing Students Clearly: Goals and Contexts Shaping Teacher Professional Vision

Keywords: Collaborative learning, In-service teacher education, Mixed methods, Noticing, Pre-service teacher education, Professional vision, Quantitative methods, Student-teacher interactions, Teacher education, Teacher professional development

Interest group: SIG 11 - Teaching and Teacher Education

Chairperson: Tina Seidel, Technische Universität München, Germany

Organiser: Ilona Södervik, University of Helsinki, Finland

Discussant: Mari Murtonen, University of Turku, Finland

Amid the complexity and rapid pace of classroom dynamics, one key aspect of advanced professional vision is the ability to maintain focused attention on individual students and identify ways to support their learning effectively. This symposium on teacher professional vision explores how teachers interact with students to foster individualized learning. We examine teacher goals and contexts as two influential factors that shape professional vision. Teacher cognition and goals are highly relevant for the selective nature of professional vision. Teaching contexts play an important role in the required capacities. Research will benefit from a deeper understanding of the factors that guide teachers' professional vision as teachers strive to support the learning of individual students within increasingly diverse classrooms. Such insight is essential for developing pedagogical practices that are responsive to the needs of various learners and for advancing teacher education as well as higher education.

The role of student-oriented goals and visual attention for preservice teachers' reasoning

Presenting Author:Tina Seidel, Technische Universität München, Germany; **Co-Author:**Ricardo Böheim, Technical University of Munich, Germany; **Co-Author:**Martin Daumiller, University of Freiburg, Germany; **Co-Author:**Alijagic Aldin, University of Augsburg, Germany; **Co-Author:**Andreas Gegenfurtner, University of Augsburg, Germany; **Co-Author:**Doris Lewalter, Technical University of Munich (TUM), Germany; **Co-Author:**Markus Dresel, University of Augsburg, Germany

Effective teachers need to perceive and make sense of instructionally relevant classroom events. In professional vision (PV) research, the interpretation of classroom interactions—reasoning—describes the knowledge-based processing of observed classroom behavior. This study examines how preservice teachers' student-oriented goals and visual attention relate to their reasoning. Fifty-one preservice teachers watched three classroom video clips while their eye movements were tracked. Before each video, participants articulated goals for specific students; afterwards, we interviewed them about their reasoning regarding observed student behavior. Linear mixed-effects analyses revealed that fixation time significantly predicted higher-quality reasoning. While student-specific goals did not generally enhance reasoning, goal type mattered: mastery-oriented goals fostered more elaborated interpretations, classroom management goals more superficial reasoning. These findings advance understanding of how teacher motivation contributes to cognitive mechanisms underlying PV, underscoring the importance of goal setting and sustained attention to support reasoning and meaningful sense-making in teacher education.

Look Them in the Eye: Teacher Gaze Reveals Teacher Equality and Equity

Presenting Author:Nora McIntyre, University of Southampton, United Kingdom

Teachers play a central role in creating an environment for student flourishing. We sought to understand how expert teachers exercise equality and equity, according to their gaze patterns, with corroboration from student reports. Twenty teachers participated in this study from the same post-16 college in the UK: ten were experts, ten were novices. Student disadvantage was identified through a multi-dimensional self-report approach and through teacher selection. We find expert teachers to exercise equality towards students by employing more student scanning gaze during content-focused didactic events. Expert teachers also employ student fixation in responding, reacting, and interacting didactic events towards disadvantaged students. Thus, we present a high-integrity approach to teacher cognition for classroom inclusion in spite of the socio-political sensitivity of our research focus and risk of social desirability that would dominate in other, more traditional research approaches.

Teachers' Visual Expertise in Classroom Management

Presenting Author:Halszka Maria Jarodzka, Open Universiteit, Department of Online Learning and Instruction, Netherlands; **Co-Author:**Senne Van Hoecke, Open Universiteit, Netherlands

We draw on a relatively large dataset (N = 60) spanning three expertise levels—teachers-in-training, beginning teachers, and experienced teachers (Van Driel et al., 2022). Each participant taught a full lesson while wearing mobile eye-tracking glasses, yielding synchronized first-person video and gaze data. In this presentation, we contribute (1) a fine-grained account of teachers' in-situ activities across entire lessons and how these patterns relate to expertise and lesson content, and (2) a machine-learning analysis of mobile eye-tracking to model gaze behavior in various teaching and classroom-management episodes. (3) We also share pilot results comparing a new pair of low-cost eye-tracking glasses with a virtually no-cost classroom setup that approximates visual attention using fiducial (ArUco) markers. Together, these analyses clarify how expert teachers allocate visual attention and act in real time, and they point to scalable methods for studying—and ultimately training—classroom-management expertise.

Shared Teacher Professional Vision in Co-Teaching Context

Presenting Author:Ilona Södervik, University of Helsinki, Finland; **Co-Author:**Meri Lavikka, University of Helsinki, Finland; **Co-Author:**Eeva Haataja, University of Helsinki, Finland

This study investigates in-service teachers' professional vision in a co-teaching setting, specifically focusing on the dynamic between a classroom teacher and a special education teacher. Six pairs of teachers participated in the study, wearing mobile eye-tracking glasses to capture their noticing behaviors. Following the lessons, gaze-stimulated retrospective recall (GSRR) interviews were conducted. Data collection occurred between April and November 2025. Preliminary results indicate differences in the teaching approaches between the teacher dyads. Preliminary analysis show that in general, classroom teachers exhibited a more holistic observational style, while the special education teacher gaze was often directed toward individual students, occasionally overlooking others. Interviews revealed various explanations for the variation in visual behaviour highlighting the different expert roles of the co-teachers. This study enhances our understanding of co-teaching implementation in real classroom settings and underscores how teachers' roles are reflected in their professional vision.

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Symposium
Learning and Instructional Technology, Teaching and Teacher Education

Teaching in the Hybrid Intelligent System: The Role of Teachers in AI-enhanced Education

Keywords: Artificial intelligence, Collaborative learning, Educational technology, Higher education, In-service teacher education, Instructional design, Metacognition, Self-regulation, Teacher education, Teacher professional development, Teaching/instruction

Interest group: SIG 11 - Teaching and Teacher Education

Chairperson: Tobias Ley, Austria

Chairperson: Sanna Järvelä, University of Oulu, Finland

Chairperson: Kairit Tammets, Tallinn University, Estonia

Discussant: Johanna Kaakinen, University of Turku, Finland

There is a general consensus about the important role that teachers have for the development of learners in an AI-enhanced educational setting, and the need to enhance teacher agency. The concept of a "Hybrid Intelligent System" has been suggested as a conceptual lens on how teachers and AI agents could be working together in a complementary way to advance student learning. There is, however, considerable uncertainty of how such hybrid systems might look like in practical terms, how teachers and AI would share tasks and what this would mean for the teaching profession. Using a recent model on teacher-AI complementarity (Figure) the symposium explores 4 recent studies that have looked at the use of AI tools in authentic educational settings, both in higher education and in schools. We will reflect about the role of teachers in these four settings to advance our knowledge on Hybrid Intelligent Systems in Education.

Regulation in AI-Supported Collaborative Learning: Roles of Teachers, Students and AI Agents

Presenting Author:Ekaterina Astafeva, University of Oulu, Finland; **Co-Author:**Sanna Järvelä, University of Oulu, Finland; **Co-Author:**Justin Edwards, University of Oulu, Finland

The study investigates how teachers, students, and an AI agent each contribute to the socially shared regulation of learning (SSRL) during AI-supported collaborative work. Although SSRL is essential for productive collaboration, little is known about how regulation is distributed across human and AI actors in real classroom interaction. Building on SSRL research and Speech Act Theory, the study conceptualises interactional moves that open opportunities for shared monitoring, evaluation, and strategic adaptation. Video-recorded group work supported by a teacher and a metacognitive AI agent (MAI) was analysed using an illocutionary act coding scheme. The analysis examines how different actors invite and enact monitoring, strategy selection, and strategy enactment. The study offers process-level insights into teacher–AI complementarity in collaborative learning. The findings contribute to understanding how teacher practices evolve in classrooms where AI provides complementary regulatory support.

From SSRL theory to teacher practice: A meta-skill toolkit for collaborative learning in the AI-era

Presenting Author:Eija Vuorenmaa, University of Oulu, Finland; **Co-Author:**Sanna Järvelä, University of Oulu, Finland; **Co-Author:**Hanna Järvenoja, University of Oulu, Finland; **Co-Author:**Sara Ahola, University of Oulu, Finland, Finland

The advancement of artificial intelligence challenges traditional teaching and learning goals and practices, emphasizing the need for meta-skills such as monitoring cognitive processes, managing emotions, and constructive interaction. These skills are critical for collaborative learning, yet research shows that they rarely occur spontaneously, and teachers do not have clear guidelines on how to support them. We address this gap by developing a theory-guided and practice-driven framework for subject teachers to support students' meta-skills in collaborative learning. Grounded in societal needs, teacher co-design, and over a decade of research on socially-shared regulation of learning, this "Meta-skill toolkit" empowers educators to foster essential skills for meaningful collaboration in AI-rich classrooms, with human–AI interaction as an integrated component. The framework is piloted in authentic school settings, where metacognitive awareness and attitudes of teachers and students toward meta-skills are examined. This study presents the structure of the framework together with insights from piloting.

When teachers and AI plan lessons together: complementary roles in lesson design

Presenting Author:Alice Aaviksoo, Tallinn University, Institute of Educational Sciences, Estonia; **Co-Author:**Kairit Tammets, Tallinn University, Estonia; **Co-Author:**Reet Kasepalu, Tallinn University, Estonia; **Co-Author:**Jürgen Sikk, Tallinn University, Estonia

The rapid adoption of Generative AI is reshaping how teachers plan lessons and create learning materials. This shift requires understanding how teachers' professional knowledge and self-regulatory processes are activated when collaborating with AI. This pilot study explores how TPACK (Technological Pedagogical Content Knowledge), self-regulated learning (SRL) and situation-specific skills (perception, interpretation, decision making) unfold during AI-assisted lesson design to identify patterns of teacher–AI complementarity. Effective collaboration requires more than technical proficiency: teachers must regulate their cognitive, motivational and behavioural engagement throughout the task.

Analysis of think-aloud protocols showed that teachers applied a broad range of knowledge, relying mainly on pedagogical knowledge and cognitive-metacognitive regulation to guide decisions. Teacher–AI complementarity happened only when teachers evaluated, questioned, and adapted AI suggestions, rather than accepting them as-is. Thus, effective use of AI in lesson design depends less on producing content and more on teachers' ability to regulate the process and shape AI-assisted design.

The Impact of AI and Pedagogical Guidance on the Quality of Learning Designs Created by Teachers

Presenting Author:Tobias Ley, University for Continuing Education Krems, Austria; **Co-Author:**Gerti Pishtari, Danube University Krems, Austria; **Co-Author:**Florian Gnadlinger, University for Continuing Education Krems, Austria

This study examines how a pedagogically grounded teacher-AI interaction can influence the quality of learning designs created by teachers. Eleven higher-education teachers participated in a three-phase workshop: designing without AI, designing with access to an AI chatbot, and designing after training on effective ways to interact with AI. Data included design artifacts, AI-chat outputs, and self-reported reflections on perceived cognitive load and design challenges. The results indicate that AI supported teachers to better meet their pedagogical goals. When the teacher-AI interaction was grounded in good learning design practices, teachers were able to elicit more contextualized and pedagogically coherent outputs. Future work includes studying the long-term impact o teachers and their learning designs.

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Symposium

Teaching and Teacher Education

Assessing teachers' knowledge, professional vision, and performance in teacher education

Keywords: Assessment methods and tools, Competences, Experimental studies, Mixed methods, Noticing, Pre-service teacher education, Professional vision, Reflection

Interest group: SIG 11 - Teaching and Teacher Education

Chairperson: Marc Kleinknecht, Leuphana University Lüneburg, Germany

Discussant: Tamar Voss, University of Freiburg, Germany

Professional teachers are a key factor for improving students' learning, well-being, and motivation. But what does it mean to be a competent teacher? How can we assess teacher competence in teacher education? The symposium aims to present and discuss various approaches to assessing the professional competencies of pre-service teachers (PSTs). Paper 1 focuses on visual attention and interpretation using eye-tracking and stimulated recalls. Results reveal variations in PSTs' cumulative cognitive processing of the situation. Paper 2 investigates PSTs' classroom management performance in a VR training and their self-reported self-efficacy and competence. Longitudinal Data show that self-reports did not fully correspond with changes in PSTs' performance. Paper 3 compared the impact of training phases on reciprocal teaching across four levels of competence. Results confirm that professional vision and knowledge are strong predictors of performance. The discussant will reflect on measurement models presented in the papers and draw theoretical and practical conclusions.

How preservice teachers see the classroom: A case study of their mental representations

Presenting Author:Henna Vilppu, University of Turku, Finland; **Co-Author:**Mirjamaija Mikkilä-Erdmann, University of Turku, Finland

The aim of the study was to explore Finnish preservice teachers' mental representations, i.e., their perceptions and interpretations of a classroom situation. Twelve preservice teachers from different stages of their teacher education programme viewed a classroom video clip, while their eye movements were recorded. Stimulated recall interviews were utilized to tap into their perceptions, focus, and time scale in which they described the situation. The quality of their cumulative cognitive processing was analysed in terms of viewpoint and continuity. Findings revealed remarkable variations in their processing of the classroom situation. Based on the number of viewpoints and elements of continuity, preservice teachers were divided into four groups highlighting qualitative differences in their cumulative cognitive processing of the classroom situation. Regardless of their stage of the teacher education programme, they were equally scattered across the groups. Pedagogical implications are discussed.

Assessing Complex Skills in a VR-Context: The Development of PSTs' Classroom Management Strategies

Presenting Author:Jolien Mouw, University of Groningen, Netherlands; **Co-Author:**Marjon Fokkens-Bruinsma, University of Groningen, Netherlands

This study investigates how triangulation of self-report and observational data can give insight into the development of pre-service teachers' (PSTs) classroom management strategies (CMS) in a Virtual Reality (VR) training setting. Twenty-four second-year PSTs practiced in a VR-kindergarten classroom during two VR-sessions with increasing scenario complexity and a reflection activity. Measures included self-efficacy, perceived competence, self-reported strategy use, and observed CM performance. Results showed significant gains in self-efficacy and perceived competence after VR practice, whereas self-reported use of strategies remained stable. Performance analyses revealed increased use of anticipation, deflection, and reaction CMS, fewer ineffective responses, and faster reactions. The partial alignment between self-reports and observations suggests that different instruments capture complementary dimensions of CM competence. Triangulating data sources can provide a more comprehensive understanding of PSTs' professional growth and could inform the design of targeted feedback in both simulated and real teaching contexts.

Knowledge, self-efficacy, prof vision and performance. How can we measure competencies in one study?

Presenting Author:Marc Kleinknecht, Leuphana University Lüneburg, Germany; **Co-Author:**Matthias Nückles, University of Freiburg, Germany; **Co-Author:**Hadmut Hipp, University of Freiburg, Germany

Our research examines the impact of core practice training on teacher competence, utilizing experimental designs and multiple assessments. Addressing the challenge of measuring teacher competence validly and reliably, we integrate different facets of competence into a single framework based on the model of

Blömeke et al. (2015). In our study ($N = 123$), we compared three training sequences on Reciprocal Teaching (RT) and assessed four levels of competence: teaching performance, professional vision, declarative knowledge, and self-efficacy. We hypothesized that combining all training sequences would yield the best teaching performance. Results supported this, showing that different training combinations enhanced distinct aspects of competence. Professional vision mediated training effects on performance, confirming its key role in linking knowledge and action, while declarative knowledge emerges as the strongest predictor of performance. We discuss how we can link the measurement of perception and interpretation of the classroom situation more closely with performance.

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Porthania P673

Symposium

Higher Education, Teaching and Teacher Education

Studying and Developing Professional Vision in Higher Education: Student and Teacher Perspectives

Keywords: Case studies, Early childhood education, Higher education, Noticing, Pre-service teacher education, Professional development interventions, Professional vision, Qualitative methods, Quantitative methods, Reasoning, Student learning, Teacher education, Video analysis

Interest group: SIG 04 - Higher Education, SIG 11 - Teaching and Teacher Education

Chairperson: Ruben Vanderlinde, Ghent University, Belgium

Discussant: Eeva Haataja, University of Helsinki, Finland

This symposium examines how professional vision, teachers' ability to notice, interpret, and reason about classroom events, manifests and develops in higher education. While research has predominantly focused on different educational contexts, the university poses unique challenges, such as disciplinary diversity and blurred boundaries between teaching and research. Bringing together four empirical studies from the Netherlands, Belgium, and Denmark, the symposium addressed two key aims: (1) to explore how professional vision unfolds among pre-service and in-service teachers in authentic higher education settings, and (2) to investigate how it can be developed through targeted interventions. The studies examine teachers' reasoning during educational innovation, their noticing of student learning processes, and the impact of video-based and feedback-driven professional development. Together, these contributions advance theoretical and practical insights into professional vision as a dynamic, situated competence essential for adaptive expertise and reflective practice in higher education.

From Noticing to Decisions: University Teachers' Pedagogical Reasoning during Course Innovations

Presenting Author: Lotte Schreuders, University of Amsterdam, Netherlands; **Co-Author:** Natalie Pareja Roblin, University of Amsterdam, Netherlands; **Co-Author:** Monique Volman, University of Amsterdam, Netherlands; **Co-Author:** Bieke Schreurs, University of Amsterdam, Netherlands

Teachers' pedagogical reasoning connects what teachers noticing and interpreting, to their decisions on how to act in response to classroom situations. Yet, little is known about how this reasoning unfolds across the teaching cycle. This exploratory longitudinal study investigates how university teachers engage in pedagogical reasoning when implementing a technology-supported course innovation. Five teachers participated in three stimulated-recall interviews (planning, instruction, reflection), supported by grant proposals and weekly questionnaires. Data were coded using a framework derived from a prior scoping review. Preliminary findings from one case illustrate how reasoning shifts over time and becomes increasingly layered, integrating interpretations of student behaviour, contextual constraints, and emerging insights about pedagogy-technology alignment in considerations about future iterations of the course innovations. These temporal dynamics highlight the importance of studying pedagogical reasoning as an evolving process.

How Statistics Teachers Notice Student Learning: Exploring Professional Vision in Higher Education

Presenting Author: Benji van Beurden, University of Amsterdam, Netherlands; **Co-Author:** Monique Volman, University of Amsterdam, Netherlands; **Co-Author:** Niels Smit, University of Amsterdam, Netherlands; **Co-Author:** Natalie Pareja Roblin, University of Amsterdam, Netherlands

Just like all teachers, statistics teachers at university are confronted with a "blooming, buzzing confusion of sensory data". Although student learning in statistics courses has distinct features such as statistics anxiety and low interest, the professional vision of statistics teachers has received little attention. Drawing from lesson observations and reflective stimulated recall interviews with 12 statistics teachers varying in experience, this study explores what they notice as salient aspects of student learning, and how they interpret these observations. The findings indicate that some, but not all teachers are aware of statistics anxiety and attend to statistical reasoning expressed in questions and written work when interpreting student understanding. When lecturing, they attend to facial expressions and absence of noise to gauge cognitive presence. Overall, the study offers an initial account of the professional vision of university statistics teachers and highlights how their noticing connects emotional and cognitive dimensions of student learning.

Evaluating a Blended Intervention to Strengthen Teacher Candidates' Professional Vision.

Presenting Author: Lien Dorme, UGENT, Belgium; **Co-Author:** Ruben Vanderlinde, Ghent University, Belgium; **Co-Author:** Wendelien Vantiegheem, University Ghent, Belgium; **Co-Author:** Kris Van den Branden, KU LEUVEN, Belgium

Given Peleman et al.'s (2020) findings on poor-quality language interactions in early childhood education, there is a clear need to strengthen teacher candidates' language-stimulating competencies. This study examines the impact of a video-based blended Professional Development Intervention (PDI) on teacher candidates' language-stimulating competencies (beliefs and professional vision). The PDI targets strategies for improving input, production, and feedback, combining an online video simulation platform with face-to-face video reflections. A quasi-experimental pre-post control group design was employed, using a video-based measure of professional vision and beliefs. Experimental ($n = 113$) and control ($n = 120$) groups were compared via repeated measures ANOVA. No significant group effects were found on professional vision or beliefs. Participants significantly felt more self-efficacious in applying language-stimulating strategies, with no group differences. Reasoning about language input decreased overall. Teacher-centered language beliefs showed a significant time-group interaction, decreasing in the experimental group but increasing in the control group.

Impact of Feedback Type on Pre-Service Teachers' Professional Vision, Self-Efficacy, and Knowledge

Presenting Author: Tijs Rotsaert, Ghent University, Belgium; **Co-Author:** Christopher Neil Prilop, Aarhus University, Denmark; **Co-Author:** Ruben Vanderlinde, Ghent University, Belgium

This study examines how different feedback types support pre-service teachers' development of classroom management competence. Specifically, we investigate whether concise versus elaborate expert feedback differentially affects three core components of professional competence: knowledge, self-efficacy, and professional vision. Professional vision was measured using a standardized video-based assessment capturing pre-service teachers' ability to perceive, interpret, and evaluate classroom events related to monitoring, managing momentum, and rules and routines. The results reveal nuanced effects: elaborate feedback improved knowledge, while concise feedback fostered stronger gains in professional vision. Moreover, feedback perceptions fully mediated effects on self-efficacy, highlighting the motivational role of feedback reception. Interestingly, effects on professional vision did not align with initial assumptions, suggesting that video-based measurement of situation-specific skills can uncover developmental patterns that may remain unnoticed when relying solely on more traditional assessment approaches. This study advances understanding of feedback design as a lever for strengthening professional vision in teacher education.

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Symposium

Innovation in Assessing Domain-Specific Critical Online Reasoning and Its Growth in Higher Education

Keywords: AI in higher education, Assessment methods and tools, Critical thinking, Digital learning, Higher education, Online learning

Interest group: SIG 04 - Higher Education

Chairperson: HENRY BRAUN, United States

Discussant: Patricia Alexander, University of Maryland, United States

Students' Critical Online Reasoning (COR)—the ability to locate, evaluate, and apply online information for academic tasks—is essential for learning in digital environments. Domain-specific COR (DOM-COR) is particularly important for identifying reliable sources, detecting errors and biases, and recognizing diverse perspectives. Yet, little is known about how university students' DOM-COR develops over time or the factors shaping this development. This session presents findings from a longitudinal study, highlighting innovations in digital COR-assessment and insights into developmental trajectories. The four interdisciplinary presentations cover: (1) longitudinal evidence of DOM-COR development among economics and social science students, (2) a multi-method comparison of human and LLM ratings of student reasoning, (3) analyses of sample selection bias in longitudinal COR-assessments, and (4) the influence of students' vocational experience and domain knowledge on DOM-COR development. Together, these studies provide novel insights into digital COR-assessment, scoring validity, and developmental and contextual influences in higher education.

Longitudinal Digital Assessment of Student Development in Domain-Specific Critical Online Reasoning

Presenting Author: Marie-Theres Nagel, Johannes Gutenberg University Mainz, Germany; **Co-Author:** Olga Zlatkin-Troitschanskaia, Johannes Gutenberg University Mainz, Germany; **Co-Author:** Paul Frederik Hodes, Johannes Gutenberg University Mainz, Germany; **Co-Author:** Lisa Martin de los Santos, Johannes Gutenberg University Mainz, Germany; **Co-Author:** Bill Walstad, University of Nebraska Lincoln, United States

University students increasingly rely on the Internet for learning, making the ability to critically search for, evaluate, and use online information a key prerequisite for academic success, particularly in economics where access to professional literature databases is limited. These skills are captured in the construct of *Critical Online Reasoning (COR)*. Despite their importance, prior research shows substantial COR deficits among students, and systematic approaches to fostering COR-skills in higher education remain scarce.

This study examines how first-year economics and economics education students develop domain-specific (DOM)-COR skills and which factors influence this development. Using newly developed digital scenario-based performance tasks with unrestricted online research, we assess students' reasoning using validated scoring schemes and log data. We present longitudinal results from the first study year (t0-t1) and identify relevant predictors (e.g., prior education, media use). The findings offer initial implications for designing targeted instructional support to foster DOM-COR skills in higher education.

How Well Do LLMs Rate Domain-Specific Reasoning? A Multi-Method Comparison with Human Experts

Presenting Author: Susanne Schmidt, Johannes Gutenberg-Universität Mainz, Germany; **Co-Author:** Paul Frederik Hodes, Johannes Gutenberg-Universität Mainz, Germany; **Co-Author:** Kevin Shenavai, Johannes Gutenberg-Universität Mainz business education, Germany; **Co-Author:** Olga Zlatkin-Troitschanskaia, Johannes Gutenberg University Mainz, Germany; **Co-Author:** Marie-Theres Nagel, Johannes Gutenberg University Mainz, Germany; **Co-Author:** Johannes Wieland, Johannes Gutenberg University Mainz, Germany; **Co-Author:** Kai Cortina, University of Michigan, United States

Large language models (LLMs) are increasingly explored for automated essay assessment, yet their reliability in evaluating domain-specific reasoning and argumentation remains insufficiently understood. This study examines LLM's performance as an automated rater for essays assessing domain-specific critical online reasoning (DOM-COR) in economics. Using ICC estimation and Bland-Altman plots, we compared LLM ratings with human expert ratings across 319 students' responses on four economic DOM-COR tasks ("wind turbine", "nudging", "pilot strike", "start-up") in three reasoning contexts (fundamental, practical, transdisciplinary). Both rater types demonstrated moderate to high agreement (human raters ICC $\approx$ 0.64-0.86, LLM rater ICC $\approx$ 0.6-0.86). The findings indicate that while LLMs cannot entirely replace human raters, they may serve supportive functions in pre-screening, formative feedback, and hybrid rating configurations in specific assessment contexts.

Sample Selection Bias in Longitudinal Assessments of Domain-Specific Critical Online Reasoning

Presenting Author: Lukas Trierweiler, Johannes Gutenberg University of Mainz, Germany; **Co-Author:** Susanne Schmidt, Johannes Gutenberg-Universität Mainz, Germany; **Co-Author:** Olga Zlatkin-Troitschanskaia, Johannes Gutenberg University Mainz, Germany; **Co-Author:** Lisa Martin de los Santos, Johannes Gutenberg University Mainz, Germany; **Co-Author:** Bill Walstad, University of Nebraska Lincoln, United States

This study investigates sample selection bias in longitudinal, multi-cohort Critical Online Reasoning (COR) assessments and analyzes how non-random participation affects score validity and panel composition. Using a Heckman selection model on data from 1,503 students, the results show that higher-performing students, particularly those with stronger academic backgrounds, are more likely to participate in the assessments, leading to upwardly biased COR scores. Selection bias was less pronounced in panel retention and absent for the COR-facet CIE score estimation. Domain-specific analyses reveal significant selection effects among economics students, but not social science students, indicating heterogeneous motivational patterns. Overall, the findings underscore the need to correct for selection bias in longitudinal educational research to avoid inflated competence estimates, especially in domain-specific contexts. Future studies should incorporate weighting or imputation methods to improve representativeness and strengthen generalizability of longitudinal competence assessments.

How Vocational Experience and Domain Knowledge Shape Students' Domain-Specific Online Reasoning

Presenting Author: Paul Frederik Hodes, Johannes Gutenberg-University Mainz, Germany; **Co-Author:** Olga Zlatkin-Troitschanskaia, Johannes Gutenberg University Mainz, Germany; **Co-Author:** Marie-Theres Nagel, Johannes Gutenberg University Mainz, Germany; **Co-Author:** Lukas Trierweiler, Johannes Gutenberg University Mainz, Germany; **Co-Author:** Lisa Martin de los Santos, Johannes Gutenberg-University Mainz, Germany

Digitalization increasingly requires university students to engage in critical reasoning with online information in both academic and professional contexts. This longitudinal study examines the development of domain-specific critical online reasoning (DOM-COR) during students' first academic year and explores the role of vocational education and work experience in this process. Using authentic, performance-based digital tasks, students' reasoning was assessed at two measurement points. Preliminary results indicate overall improvement, particularly in transdisciplinary reasoning, suggesting that university learning environments support students' ability to evaluate and integrate digital information. Ongoing analyses indicate that these gains differ for students with vocational backgrounds, who bring distinct experiential and knowledge-based learning prerequisites that may shape their trajectories in digital reasoning.

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Porthania P722

Single Paper

Teaching and Teacher Education

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Keywords: Assessment methods and tools, Conversation/discourse analysis, Educational technology, Mixed methods, Pre-service teacher education, Problem-based learning, Professions and applied sciences, Self-regulation, Teacher education

Interest group: SIG 11 - Teaching and Teacher Education

Chairperson: Stefan T. Siegel, University of St.Gallen, Switzerland

Expanding the field practice experience scales (FPE-DK) to improve targeting to the population

Keywords: Assessment methods and tools, Pre-service teacher education, Professions and applied sciences, Teacher education

Presenting Author: Tine Nielsen, UCL University College, Odense, Denmark; **Co-Author:** Beate Tommerup Headley, UCL University College, Odense, Denmark; **Co-Author:** Gitte Gorm Larsen, UCL University College, Odense, Denmark

Diverse opportunities to learn during field practice in teacher education are essential for the development of core skills and profession-specific reasoning of increasing complexity, as these are learned through increasing involvement in the profession. The Field Practice Experience scales (FPE-DK) measures student teachers' opportunities to learn through Observation of other teachers, own Practice and receiving Feedback on 12 key teaching activities while in field practice placements during teacher education. While the three scales have been shown to fit pure Rasch models, they were not well-targeted to the population. The current study successfully extended the scales to 25 items to improve targeting, though the three scales now each consisted of two subscales; one focused on instruction and one focused on collaboration. Differences in opportunities to learn through observation, own practice and feedback dependent on level of field practice and their implications for teacher education will be presented and discussed.

From seed to practice: Feedback engagement in master's thesis supervision in teacher education

Keywords: Assessment methods and tools, Mixed methods, Pre-service teacher education, Teacher education

Presenting Author: Kim-Daniel Vattøy, Volda University College, Norway

Supervisory feedback plays a decisive role in shaping postgraduate learning, particularly in teacher education, where students transition from academic study to professional practice. This mixed-methods study explores master's students' perceptions of supervisory feedback and how it cultivates feedback engagement in thesis supervision. Drawing on survey data and qualitative responses, the study examines students' perceptions of feedback and its influence on their learning. Preliminary findings suggest that while students generally value supervision, feedback often emphasises deficiencies over development and offers limited support for self-regulated learning. Engagement with feedback is strongly linked to students' perceptions of supervisors as learning contributors, with satisfaction emerging as a key predictor. Qualitative findings reveal variation in feedback quality, availability, and guidance for deeper learning. The study highlights the need for more holistic and dialogic feedback practices to support master's students' growth from initial ideas to completed theses. Implications for supervisor development and feedback innovation are discussed.

Problem-Based Learning: Culturally Responsive Pedagogy in teachers training program

Keywords: Conversation/discourse analysis, Pre-service teacher education, Problem-based learning, Teacher education

Presenting Author: Rotem Trachtenberg-Maslato, Ben-Gurion University of the Negev, Israel

This study examines how Problem-Based Learning (PBL) supports culturally responsive pedagogy in an integrated teacher training program in Israel, consisting of 70% Jewish students and 30% Bedouin students. We analyzed the learning experiences of 45 Bedouin students in a year-long PBL course through sociocultural discourse analysis of audio recordings, discussions, and online written responses, and thematic analysis of students' reflections. Findings reveal that only half of the students chose to engage with pedagogical issues with explicit socio-cultural relevance. A significant tension emerged between high autonomy in learning stemming from authentic, self-selected problems and low self-efficacy manifested in a persistent need for instructor validation. Alongside high cognitive and emotional engagement in the learning process, students consistently expressed doubts about their project quality. While PBL shows promise for multicultural teacher education, further investigation is needed to understand why some students avoid socio-culturally relevant problems and how to support their self-directed learning.

Teachers' Reflection and SRL Instruction Skills Through Virtual Reality Classroom Videos

Keywords: Educational technology, Pre-service teacher education, Self-regulation, Teacher education

Presenting Author: Tova Michalsky, Bar-Ilan University, Israel

This study investigates whether virtual reality (VR) classroom videos can enhance preservice teachers' reflection skills and their teaching of self-regulated learning (SRL). While video-based reflection is common in teacher education, the potential of immersive VR as a reflection stimulus remains underexplored. Using a quasi-experimental mixed-methods design, 44 STEM preservice teachers reflected on SRL instruction through VR-based classroom scenarios, and 42 peers used the same scenarios in a traditional video format. Both groups showed improvement over time in SRL-related reflection; however, the VR group demonstrated significantly greater gains in reflection quality and in the SRL strategies they later implemented during teaching. These findings highlight VR's added value as a reflective and instructional tool and suggest that immersive simulations can strengthen preservice teachers' capacity to analyze and apply SRL practices. The study contributes evidence supporting VR integration in teacher education programs that aim to develop reflective, SRL-supportive pedagogy.

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11 June 2026 10:45 - 12:15

Main Building U4080

Single Paper

Assessment and Evaluation, Higher Education

Single Paper paper_type_1 session 26

Keywords: AI in higher education, Artificial intelligence, Assessment methods and tools, Attitudes and beliefs, Content analysis, Educational policy, Higher education, Pre-service teacher education, Self-efficacy

Interest group: SIG 04 - Higher Education

Chairperson: Veera Kallunki, University of Helsinki, Finland

Determinants of Formative Assessment in Higher Education

Keywords: Assessment methods and tools, Attitudes and beliefs, Higher education, Self-efficacy

Presenting Author: Guillaume Dumas, University of Montpellier, France; **Co-Author:** Laurent Brun, Université de Montpellier, France; **Co-Author:** Maryam Akkouch-Oualkadi, Université de Montpellier, France; **Co-Author:** Manuel Bächtold, University of Montpellier, France; **Co-Author:** Zi Yan, The Education University of Hong Kong, Hong Kong

Topic: This study investigates the determinants of formative assessment (FA) intentions and practices among French higher education teachers, extending the Theory of Planned Behavior (Ajzen, 1991) to account for higher-education-specific factors.

Main Results: Intentions to implement FA are primarily explained by instrumental attitude, subjective norms, and perceived controllability, and are reinforced by pedagogical and FA-specific training. However, intentions do not directly translate into practice. Teacher-centered FA is associated with active teaching approaches, autonomy, and increased assessment opportunities, while student-centered FA is driven by self-efficacy, instrumental attitude, and participatory pedagogy. Both practices are more prevalent at the master's level and among teaching-focused staff.

Implication: Effective FA implementation requires universities to combine awareness-raising initiatives with technical training that enhances teachers' self-efficacy and autonomy, thereby bridging the gap between intention and practice.

Shifting Trust in the Age of AI: Teachers' and Students' Views on Exam Integrity in Higher Education

Keywords: AI in higher education, Assessment methods and tools, Attitudes and beliefs, Content analysis

Presenting Author: Kati Kananen, University of Eastern Finland, Finland; **Co-Author:** Sari-Johanna Karhapää, University of Eastern Finland, Finland

This presentation examines university teachers' views on exam fraud and students' perceptions of it, as well as the use of artificial intelligence in studying. The study draws on two qualitative datasets collected in different time periods: teachers' reflections on remote assessment gathered in 2021 ($n = 92$) and students' views on cheating and the use of artificial intelligence gathered in 2025 ($n = 73$). Grounded in trust theory (Mayer et al., 1995), the analysis explores how teachers and students understand fairness, control, and academic integrity. The presentation contributes to ongoing discussions on academic integrity and assessment cultures and considers how higher education teachers navigate moral and pedagogical dilemmas in the age of artificial intelligence.

Learning to Assess in the Age of AI: Findings from a Study with Preservice Teachers

Keywords: Artificial intelligence, Assessment methods and tools, Higher education, Pre-service teacher education

Presenting Author: Marie-Hélène Hébert, TELUQ University, Canada; **Co-Author:** Naomie Fournier Dubé, Université de Montréal, Canada

As artificial intelligence (AI) becomes increasingly integrated into educational settings (CSE, 2024; MEQ, 2024), this study explores its implications for the training of future teachers in the field of assessment. Conducted with 44 preservice teachers in Québec as part of an initiative to raise awareness about the use of AI in assessment, the study compared two groups: one with access to ChatGPT ($n=23$), and one without ($n=21$). Participants in both groups evaluated a pupil's written work using a criterion-based rubric, provided an overall judgment, and justified their evaluation. Results show that access to ChatGPT influenced both the assessment process and the participants' experience. These findings raise important pedagogical questions for teacher education: What competencies should future teachers develop to fulfill their role as ethical and informed assessors in a context where AI is becoming an active presence in the classroom?

The elephant in the room: grading in an age of Artificial Intelligence

Keywords: AI in higher education, Assessment methods and tools, Educational policy, Higher education

Presenting Author: Juuso Henrik Nieminen, Deakin University, Australia; **Co-Author:** Margaret Bearman, Deakin University, Australia; **Co-Author:** Joanna Tai, Deakin University, Australia; **Co-Author:** Thomas Corbin, CRADLE, Deakin University, Australia; **Co-Author:** David Boud, Deakin University/University of Technology Sydney, Australia; **Co-Author:** Phillip Dawson, Deakin University, Australia

While universities worldwide are redesigning assessment due to the surge of Artificial Intelligence (AI), there is a critical silence in the sector concerning grades. Grading is the elephant in the room within the conversations about how universities should respond to GenAI. In this conceptual study, we analyse recent AI policies and approaches in higher education regarding grades. First, we note a policy silence in our contexts of Australia, Finland, and Hong Kong. While some universities in these contexts have redesigned assessment, none of them have 'redesigned' the ultimate representations of what students can do, grades. Second, we discuss how the use of AI-powered grading, such as automated grading tools, further perpetuate the status quo of grading systems. We argue that grading is not something to be 'fixed' by AI tools. Instead, fundamental rethinking of how and why students' skills are institutionally represented in an age of AI is needed.

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11 June 2026 10:45 - 12:15
Main Building, U4075
Single Paper
Instructional Design, Teaching and Teacher Education

Single Paper paper_type_1 session 17

Keywords: Action research, Artificial intelligence, Instructional design, Primary education, Reading comprehension, Reflection, Science education, Teacher education, Teacher educator professional development, Teaching/instruction

Interest group: SIG 11 - Teaching and Teacher Education

Chairperson: Liesje Vanhaecke, Belgium

Lessons for Teacher Education on the Warm Demander Attitude as Part of Relational Pedagogy

Keywords: Primary education, Reading comprehension, Reflection, Teacher education

Presenting Author:Renata Anna Dezso, University of Pecs, Faculty of Humanities and Social Sciences, Institute of Education Sciences, Hungary; **Co-Author:**Hanna Barabás, University of Pécs, Hungary

The *Reading Fluency and Comprehension Research Group* of the Hungarian Academy of Sciences and the University of Pecs has been studying primary school children's related learning processes countrywide, as well as their teachers' relevant conceptual professional frameworks. Our presentation compares findings on reading fluency and comprehension of three different groups of learners with the mindset matrices of pupils (n=35), their parents (n=35), their classroom teachers (n=3), as well as an assessment of the warm demander characteristics of the teachers (n=13) working within these classes interpreted as part of relational pedagogy. Methodological triangulation includes participant observations, semi-structured interviews, and the adaptation of a validated reading attitude tool. Pupils' reading mindsets show positive connections with those of their parents, and with the Warm demander traits of their teachers. Findings for teacher education suggest that integrating psychological capital and considering relational pedagogy consistently supports productive learning mindsets and development in pupils' reading fluency.

Investigating static and adaptive AI-generated scaffolding on pre-service biology teachers' ePCK

Keywords: Artificial intelligence, Reflection, Science education, Teacher education

Presenting Author:Elisa Henle, LMU Munich, Germany; **Co-Author:**Patrizia Weidenhiller, LMU Munich, Germany; **Co-Author:**Franziska Behling, LMU Munich, Germany; **Co-Author:**Birgit J. Neuhaus, LMU Munich, Germany

Pedagogical Content Knowledge (PCK) is essential for teachers' professional knowledge. Reflecting classroom situations is a key component of PCK. Reflecting consist of noticing and reasoning, which can be supported by scaffolds. The following study investigated the effect of two types of scaffolds on pre-service teachers' ePCK: static (paper-pencil reflection tool) and adaptive (AI-generated chatbot). The study was conducted in a 2*2 pre-post-test design with N=54 pre-service biology teachers. Participants wrote reflections: two on the same topic 'blood groups' as pre-test and intervention, and one on the topic 'mosquito mouthparts' (post-test). During intervention, participants received a treatment (reflection tool, chatbot, combination or none). A mixed ANOVA showed a significant interaction effect between time and treatment. The chatbot and reflection tool fostered the ePCK in the intervention. In the post-test, the chatbot and the combination achieved good results. Based on these results different chatbots can be developed to foster pre-service teachers' ePCK.

Conceptualizing Openness in Primary Education: Dimensions and Intensities

Keywords: Instructional design, Primary education, Teacher education, Teaching/instruction

Presenting Author:David Hubner, University College for Teacher Education Augustinum, Graz, Austria; **Co-Author:**Daniela Longhino, Pädagogische Hochschule Steiermark, Austria

Designing inclusive and future-oriented teaching is increasingly challenging amid megatrends such as digitalization, individualization, and artificial intelligence. *Opening instruction*—as a didactic principle enabling learner participation and self-determination—can foster autonomy, cooperation, and democratic competence. This mixed-methods study explores how primary school teachers and student teachers conceptualize and enact openness in teaching. Based on theory-driven descriptions of five dimensions (organizational, methodological, content-related, performance-related, social) and six intensities of openness, a questionnaire (N = 25) was combined with four group discussions and one focus group interview. Findings reveal that ideal conceptions of openness exceed realized practices across all dimensions. Organizational openness appears most frequently implemented, while content-related and performance-related openness is less developed. The results offer a differentiated understanding of openness as a instructional design principle and contribute to clarifying theoretical ambiguities, supporting both teachers' professional reflection and the operationalization of openness for further research.

Action research as reflective practice in teaching and teacher education

Keywords: Action research, Reflection, Teacher education, Teacher educator professional development

Presenting Author:Ildikó Zank, University of Pécs Faculty of Humanites and Social Sciences, Hungary

The paper explores action research as a praxis-oriented, dialogical form of engagement, and a model of participatory knowledge generation (Levin, 2012) illustrated through two participatory action research projects. The first project was embedded in a teacher education programme during which conditions for cooperative learning and collaborative teaching were created. The second project was conducted within and international research framework in close collaboration with primary school teachers, implementing a series of interventions across action research cycles to support pupils' development of metacognitive skills and epistemological awareness. Across both projects, reflective practice served not only to document and guide the action research process but also as a catalyst for transforming participants' self-understanding, encouraging students' reflective thinking, and strengthening pupils' study habits and self-assessment abilities. Additionally, engagement in reflective practices contributed to the professional learning of teachers and teacher educators, deepening their commitment to continuous pedagogical advancement.

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11 June 2026 10:45 - 12:15
Porthania P724
Single Paper
Higher Education

Single Paper paper_type_1 session 19

Keywords: Competence development, Doctoral education, Educational development, Evidence-based teaching, Higher education, Quantitative methods, Student learning, Survey research, Teacher, Teaching/instruction

Interest group: SIG 04 - Higher Education

Chairperson: Ilona Södervik, University of Helsinki, Finland

How curriculum making relates to wellbeing among pedagogical leaders and teachers?

Keywords: Educational development, Higher education, Quantitative methods, Teacher

Presenting Author:Jenni Sullanmaa, University of Helsinki, Finland; **Co-Author:**Lotta Tikkanen, University of Helsinki, Finland; **Co-Author:**Kirsi Pyhältö, University of Helsinki, Finland

Curriculum making that involves clear management and participative leadership can potentially facilitate both commitment to shared goals and the participants' teaching-related wellbeing. In this study, we aimed to understand the associations between the curriculum making strategy, in terms of change management and knowledge sharing, and participating university teachers' and pedagogical leaders' wellbeing. Moreover, we examined whether the dynamics differed between teachers and pedagogical leaders. Survey data were collected from 1471 university teachers and 250 pedagogical leaders. The data were analysed with structural equation modeling. Findings showed that participants' perceptions of successful change management contributed to their views of knowledge sharing in curriculum making. Pedagogical leaders' perceptions of change management were associated with better teaching-related wellbeing, whereas teachers' perceptions of knowledge sharing contributed to their teaching-related wellbeing. The findings have implications for orchestration of higher education curriculum development to ensure the promotion of wellbeing and quality education.

Students' experiences of doctoral education: Integrating cognitive, social, and affective dimensions

Keywords: Doctoral education, Higher education, Quantitative methods, Survey research

Presenting Author:Tobias Jenert, Paderborn University, Germany; **Co-Author:**Caren Sureth-Sloane, University of Paderborn, Germany; **Co-Author:**Julia Gördes, University of Paderborn, Germany; **Co-Author:**Sönke Sievers, University of Paderborn, Germany

e developed a comprehensive model of the experience of doctoral students encompassing a cognitive, a social, and an affective dimension. Based on a sample of 350 doctoral students, our doctoral experience inventory (DEXI) allows researchers to investigate the effects of doctoral programs and compare different groups of doctoral students. Testing for the nomological validity of the DEXI, we found that negative experiences of research (affective dimension) correlate with students' thoughts of quitting their doctoral studies. Feeling socially connected to one's research community (social dimension) correlates with a positive experience of research (affective dimension) and is associated with an achievement-oriented conception of research (cognitive dimension). Our research implies that doctoral students' experiences play a huge part in whether doctoral studies can be successfully completed. Our findings highlight the importance of the research community welcoming and supporting emerging researchers, providing insights on how to prevent dropouts and opportunities for doctoral students' development.

Learning Generic Skills During the First Three Years of University Studies

Keywords: Higher education, Quantitative methods, Student learning, Survey research

Presenting Author: Anne Virtanen, University of Jyväskylä, Finland; **Co-Author:** Maija Gerlander, University of Jyväskylä, Finland; **Co-Author:** Eeva Kallio, University of Jyväskylä, Finland; **Co-Author:** Peppi Taalas, University of Jyväskylä, Finland; **Co-Author:** Päivi Tynjälä, University of Jyväskylä, Finland

This study investigates how university students perceive the development of generic skills during their first three years, and which teaching and assessment practices support this learning. Longitudinal data were collected from two cohorts who began studies in 2021 ($n = 1374$) and 2022 ($n = 1101$), completing the same survey at the end of each academic year. Twenty-five generic skills were selected from the World Economic Forum's 2025 skills framework. Students reported steady gains, especially in holistic thinking, critical thinking, communication, collaboration, and listening. Teaching and assessment practices became increasingly diverse, and this diversity was linked to higher perceived skill development. Cohort comparisons confirmed the pattern: the 2022 cohort, who experienced more varied pedagogical practices, reported stronger learning outcomes. Findings suggest that diverse and multifaceted teaching and assessment effectively support generic skills development.

Considering Learning Transfer in Higher Education: An Offer-and-Use Model

Keywords: Competence development, Evidence-based teaching, Higher education, Teaching/instruction

Presenting Author: Pia Schäfer, RPTU University Kaiserslautern-Landau, Germany; **Co-Author:** Alisha Koch, RPTU University Kaiserslautern-Landau, Germany; **Co-Author:** Susanne Wisshak, RPTU University Kaiserslautern-Landau, Germany

Higher education should prepare students with the necessary knowledge and skills for complex professional situations. Therefore, higher education programs should be designed in a manner which facilitates learning transfer and prepares students to apply what they have learned in their respective workplaces. This contribution presents an offer-and-use model for higher education focusing on transfer predictors. It is based on a constructivist perspective, which posits that students actively construct their own learning progress. Consequently, the success of this process depends on how learning opportunities are interpreted and used by the students. Participation in a course does not automatically lead to transfer. Rather, its effectiveness depends on various factors. The model includes external factors (teaching), individual factors (students), and contextual factors (university), the perception, interpretation and use of learning opportunities by the students, and their learning processes. These factors influence teaching outcomes at different levels, including reactions, learning, transfer, and work results.

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11 June 2026 10:45 - 12:15

Porthania P617

Single Paper

Higher Education

Single Paper paper_type_1 session 39

Keywords: Collaborative learning, Educational technology, Higher education, Instructional design, Interdisciplinary, Learning technologies, Peer interaction, Problem-based learning, Quantitative methods, Social interaction, Student learning, Student-teacher interactions

Interest group: SIG 04 - Higher Education

Chairperson: Tomi Kiviluoma, University of Helsinki, Finland

Personality and Sense of Belonging among International Students: The Role of Social Interactions

Keywords: Higher education, Peer interaction, Social interaction, Student-teacher interactions

Presenting Author: Zhou Li, University of Hamburg, Germany; **Co-Author:** Carla Bohndick, University of Hamburg, Germany; **Co-Author:** Julia Zimmermann, FernUniversität in Hagen, Germany; **Co-Author:** Jonas Breetzke, University of Hamburg, Germany

Personality traits play important roles in shaping sense of belonging. Research has predominantly examined the direct effects of personality, while indirect effects over social interactions have received far no empirical attention. International students interact mainly with host nationals, co-nationals, and non-co-nationals. The present study investigates how personality relates to belonging both directly and indirectly over three interaction types. Possible cultural differences are explored. Analyses were based on data from $N = 3,791$ international students in Germany. Mediation models reveal that the direct effects of openness ($\beta = .19$), conscientiousness ($\beta = .26$), extraversion ($\beta = .08$), and agreeableness ($\beta = .18$) are significantly positive. Indirect effects are small but mostly significant. Personality traits are more influential in uncertain contexts like interactions with host nationals. Interactions with host nationals predict the strongest belonging for most countries, while for students from Asia and the Pacific, all three interaction types are equally important. Implications for higher education practice are discussed.

Multidisciplinary Student Collaboration in a Genomics and the City Assignment: Boundary Crossing

Keywords: Collaborative learning, Higher education, Interdisciplinary, Student learning

Presenting Author: Canan Mesutoglu, Erasmus University Rotterdam, Netherlands; **Co-Author:** Iris Jansen-Bakkeren, Department of Clinical Genetics, Erasmus MC, Netherlands

Addressing complex societal problems requires collaborative problem solving using the knowledge and skills from multiple disciplines. Higher education students are increasingly expected to respond to societal problems, bridging knowledge, skills, and methods from different specializations. Despite this increased attention on multidisciplinary teamwork in higher education programs and courses, research on how students experience learning across professional, disciplinary, or other boundaries is underdeveloped. Investigating boundary crossing in student teams can respond to the need to reveal learning mechanisms and to more effectively support multidisciplinary teamwork. This case study explored boundary crossing mechanisms that emerged across team members from biomedical and social sciences in a course from a newly established interdisciplinary master program on genomics in society. Our theory-based analysis of the qualitative data revealed learning mechanisms at the boundaries that provide pedagogical directions to support multidisciplinary teamwork.

The impact of overcontrolling teacher behavior in problem-based learning in higher education

Keywords: Collaborative learning, Higher education, Problem-based learning, Quantitative methods

Presenting Author: Irmela Blüthmann, Freie Universität Berlin, Germany; **Co-Author:** Anabel Bach, Freie Universität Berlin, Germany; **Co-Author:** Harm Peters, Charité-Universitätsmedizin Berlin, Germany; **Co-Author:** Felicitas Thiel, Freie Universität Berlin, Germany; **Co-Author:** Rainer Watermann, Freie Universität of Berlin, Germany

Problem-based learning (PBL) is a student-centered approach to promote small-group learning. Productive group interaction requires facilitation (e.g., by hints/prompts) adaptive to the group's progress. Non-adaptive overcontrolling support behavior can have adverse cognitive and motivational effects for learners. Given the paucity of research on overcontrolling teacher behavior in collaborative learning, we conducted a quantitative study with medical students in PBL ($N = 229$ students in 133 groups). We used a questionnaire measuring overcontrolling teacher behavior, and outcomes (knowledge, problem-solving, collaborative competence gain, increased interest) by student self-report to examine effects of overcontrolling teacher behavior on group outcomes by multilevel regression analyses. Results show that overcontrolling behavior was significantly negatively associated with increased interest in PBL and collaborative competence gain at group level. Despite some limitations, our study provides insight into the impact of teacher facilitation in PBL and expands research in measuring non-adaptive support of collaborative learning in higher education.

A multilingual systematic analysis and proposal of a framework for defining Hybrid Learning

Keywords: Educational technology, Higher education, Instructional design, Learning technologies

Presenting Author: Tetyana Vereshchahina, University of Fribourg, Switzerland and NAUKMA University, Ukraine, Switzerland; **Co-Author:** Bernadette Charlier, University of Fribourg, Switzerland; **Co-Author:** Paola Costa Cornejo, Sorbonne University, France

Several labels such as Hybrid Learning (HL), Blended Learning (BL) or Synchronous Hybrid Learning (SHL) have proliferated to learning environments. These labels lack clear definitional boundaries, generating conceptual ambiguity that hinders research. This systematic multilingual review (English, Spanish, French) aims to clarify their conceptual foundations. It used the PRISMA flowchart and analysed 4231 articles (2018–2025) across five databases. 46 included extended

definitions were coded using an initial analytical framework of seven spatio-temporal, technological, and pedagogical dimensions. The analysis reveals high variability within the same label and significant conceptual overlapping between them. For instance, one unique configuration (spatio-temporal and mediatization) includes both BL and HL definitions. While the spatio-temporal dimension is ubiquitous, others are unevenly represented. Collaboration emerged as a key new dimension. This ambiguity negatively impacts research validity and comparability. The proposed framework will support more rigorous comparison and the cumulative advancement of research.

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Porthania P722

Single Paper

Developmental Aspects of Instruction, Teaching and Teacher Education

Single Paper paper_type_1 session 24

Keywords: Beginning teachers, Developmental processes, General didactics, Primary education, Professional development interventions, Qualitative methods, Secondary education, Teacher education, Teacher effectiveness, Teacher professional development

Interest group: SIG 11 - Teaching and Teacher Education

Chairperson: Emmi Saariaho-Räsänen, University of Turku, Finland

How former beginning teachers reach the final decision to quit

Keywords: Beginning teachers, Professional development interventions, Qualitative methods, Teacher effectiveness

Presenting Author: Huixuan Xu, The Education University of Hong Kong, Hong Kong; **Co-Author:** Zhuoran Li, The Education University of Hong Kong, Hong Kong; **Co-Author:** Jiaxin Wang, The Education University of Hong Kong, Hong Kong

While much research has explained the reasons for turnover among beginning teachers, few studies have focused on how these teachers arrive at their final decisions to quit. Following Maertz and Campion's typology of turnover decision paths, this study proposes refined indicators and an analysis method to classify the turnover decision paths of former beginning teachers. Examining 29 job experiences from 22 Chinese former beginning teachers in a narrative study, the present study identified five decision paths for beginning teachers' turnover, including preplanned, satisficing, comparison, impulsive, and conditional quitting. The results have implications for the development of turnover models to more precisely detect the process and reasons for the turnover of beginning teachers. Such knowledge will help school management to provide timely interventions to support and retain qualified teachers in the field.

From first year in teacher education to the first year as a teacher: The tensions and the becomings

Keywords: Beginning teachers, Developmental processes, Qualitative methods, Teacher education

Presenting Author: Birgitte Lund Nielsen, VIA University College, Denmark

Findings are presented from a longitudinal study of teacher identity, focusing on one teacher followed from her first year as a student in teacher education (2022) and through her first year of practice as teacher (2025). Drawing on dialogical self-theory, the study explores professional identity development using a narrative interview approach that considers temporality, sociality, and spatiality, with parts of the dialogue being mediated by pictures and AI-generated graphics. The findings illustrate an ongoing process of interpreting and reinterpreting experiences over time, revealing both continuity—such as tensions in finding her place related to the understanding of the teacher profession in the social world—and both continuity and discontinuity in the I-positions shaping her self-understanding at different stages of becoming, for example when interacting with colleagues, pupils, and parents and balancing between ideal and reality in the job as a teacher. Implications for supporting student teachers' identity development are discussed.

The Dilemma and Responses to Life Education in Taiwan's Primary and Secondary Schools

Keywords: General didactics, Primary education, Qualitative methods, Secondary education

Presenting Author: Pilan Kuo, Graduate Institute of Curriculum & Instruction, College of Education, National University of Tainan, Taiwan

Through in-depth interviews with six elementary and secondary teachers from northern, central, and southern Taiwan, this study identified persistent challenges in life education implementation and developed responsive strategies. Our qualitative analysis constructed a practical framework featuring structured reflective dialogue and curriculum-based the core values models, designed to connect philosophical concepts with students' lived realities. Participating teachers confirmed the framework's high practical value and enhanced teaching confidence. Results demonstrated three significant outcomes: improved self-efficacy in facilitating difficult conversations, a marked shift toward student-centered experiential pedagogy, and deeper recognition of life education's role in holistic development. This context-sensitive, teacher-informed approach provides sustainable strategies for curriculum renewal, enhancing life education's authenticity and impact across diverse Taiwanese school environments.

Using the lesson study method to support implementing inclusive practices in primary education

Keywords: Primary education, Professional development interventions, Qualitative methods, Teacher professional development

Presenting Author: Äli Leijen, University of Tartu, Estonia; **Co-Author:** Liina Lepp, University of Tartu, Estonia; **Co-Author:** Kirke Möllits, University of Tartu, Estonia; **Co-Author:** Tiina Kivirand, University of Tartu, Estonia; **Co-Author:** Riin Tamm, University of Tartu, Estonia; **Co-Author:** Mare Tallo, Tallinn University, Estonia

Inclusive education, grounded in social justice principles and international agreements, has led many European countries to integrate students with special educational needs into mainstream schools. Despite this progress, implementation remains challenging, particularly due to teachers' low confidence and insufficient competencies in teaching diverse learners in a single classroom. This study explores the use of the Lesson Study method as a professional development approach to enhance teachers' and support specialists' confidence and competence in implementing inclusive practices. Data were collected at the end of a professional development course involving teams of primary school teachers and support specialists from 14 schools, alongside teacher educators facilitating Lesson Study. Focus group interviews are analysed using qualitative thematic analysis. Findings will inform strategies for fostering collaboration and enhancing inclusive education practices in Estonia and internationally.

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Language Center 204

Symposium

Higher Education

Supporting reflection and innovation through academic development

Keywords: Higher education, Research-based teaching, Teacher education, Teacher educator professional development, Teacher professional development

Interest group: SIG 04 - Higher Education

Chairperson: Rik Vangangelt, Utrecht University, Netherlands

Organiser: Marloes Vreekamp, Wageningen University and Research Centre, Netherlands

Organiser: Svenne Groeneweg, University of Amsterdam, Netherlands

Organiser: Beste Yıldırım, Eötvös Loránd University, Budapest, Hungary

Discussant: Helga Dörner, Eötvös Loránd University, Hungary

Academic development – like professional development programs – provide university teachers with opportunities for reflection and lead to the improvement of educational practice. This symposium focuses on how academic development can help fostering reflective and innovative approaches towards university teaching. In this symposium, four empirical studies are presented that shed light on how academic development can contribute to reflective and innovative teaching approaches. Brought together, these studies collected data at several universities, in various European countries. All four studies are undertaken by PhD researchers in educational science, three of whom are also academic developers, positioning their work at the intersection of practice and research and thereby enhancing both the practical relevance and theoretical contribution of the studies. The studies focused on different teacher tasks, university teachers from different stages in their career, and tried to unravel potential impact of academic development opportunities.

Unravelling teacher learning during a PDP: a longitudinal multiple case study

Presenting Author: Marloes Vreekamp, Wageningen University and Research Centre, Netherlands; **Co-Author:** Judith Gulikers, Wageningen University, Netherlands; **Co-Author:** Piety Runhaar, Wageningen University, Netherlands; **Co-Author:** Perry den Brok, Wageningen University, Netherlands

Over the past decades, Higher Education Institutions (HEIs) have increasingly implemented Pedagogical Development Programmes (PDPs). While their positive

effects are widely acknowledged, teachers' individual learning outcomes vary considerably. Moreover, little is known about how teachers' development unfolds over time. This longitudinal study therefore examined teachers' learning processes during a formal, longitudinal PDP. We followed seven teachers during their participation and mapped their learning experiences using the Interconnected Model of Professional Growth. Results revealed a variety of learning experiences, with continuous learning following two patterns: impact-driven and insight-driven. Continuous learning was shaped by various hindering and stimulating contextual factors. Findings suggest that PDPs can be enhanced by supporting teachers' reflective practices and guiding the implementation of their learning into teaching practice, fostering innovation in higher education pedagogy.

Social Networks as Vehicles for Innovation and Reflection in a SoTL Academic Development Program

Presenting Author:Svenne Groeneweg, University of Amsterdam, Netherlands; **Co-Author:**Natalie Parejia Roblin, University of Amsterdam, Netherlands; **Co-Author:**Daphne van Weijen, University of Amsterdam, Netherlands; **Co-Author:**Monique Volman, University of Amsterdam, Netherlands

The Scholarship of Teaching and Learning (SoTL) fosters reflective teaching and educational innovation by encouraging teachers to systematically inquire into their own practice. This study explores how social interactions within university teachers' professional networks shape the development and impact of SoTL projects. Drawing on social network theory, we first interviewed participants in a SoTL academic development program to map and understand their networks, then we selected several of these networks for closer exploration through interviews with network members. Findings show that teachers who more deliberately built and engaged their networks tended to develop deeper collaborations, while supportive, low-hierarchical environments fostered reflective dialogue even when such engagement was less deliberate. Rather than immediate or visible teaching innovations, network interactions primarily stimulated reflection and an inquiry stance. Institutions can promote such reflection by creating time and space for sustained dialogue and by valuing inquiry as a meaningful form of educational impact.

University teachers' engagement in educational scholarship and research

Presenting Author:Rik Vangangelt, Utrecht University, Netherlands; **Co-Author:**Noah Rookmaaker, Utrecht University, Netherlands; **Co-Author:**Ilsa Witteveen, University Utrecht, Netherlands; **Co-Author:**Esther van Dijk, Universiteit Utrecht / Hogeschool Utrecht, Netherlands; **Co-Author:**Frans Prins, Utrecht University, Netherlands; **Co-Author:**Manon Kluijtmans, University Utrecht, Netherlands

University teachers' engagement in practice-oriented educational research fosters reflective teaching approaches (Trigwell, 2013). It also supports the transfer of theoretical insights to specific contexts (Heikkinen et al., 2016), enabling teaching innovations. This study explores the motivations, experiences, and perceived institutional support of 29 university teachers, at three universities, who received a grant for conducting practice-based educational research at three universities. The grants provided time, funding, and mentorship, though the nature of this support varied across institutions. University teachers' were mainly motivated by a desire to enhance education. Their education research engagement impacted their teaching practice and for some had an impact on their self-confidence as teachers. The offered support was experienced differently by participants, underpinning the importance of tailor-made support for university teachers' educational research engagement.

Academic Developers as Boundary Crossers: Facilitating Organizational Learning and Innovation

Presenting Author:Beste Yıldırım, Eötvös Loránd University, Budapest, Hungary

Academic developers (ADs) occupy pivotal positions in facilitating organizational learning and change in evolving higher educational landscapes. This study explores their roles and conditions that shape the broader impact of their work across micro, meso, macro and mega organizational levels, drawing on interviews with 20 ADs from 16 institutions across 9 European countries. The findings reveal that ADs contribute to organizational change by acting as cultural mediators and boundary crossers that interact with multiple organizational levels to facilitate organizational learning and change. Their AD work and its impact are shaped by institutional conditions, cultures of teaching and learning and the balance between autonomy and authority. The study highlights the vital role of ADs in enhancing transformation and innovation within the institutions. By examining the conditions that enable or constrain this process, the study contributes to understanding how ADs foster learning and change across diverse contexts.

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Language Center 206

Symposium

Teaching and Teacher Education

Becoming Professional – Learning, Professional Agency and Wellbeing in the Early Years of Teaching

Keywords: Adaptive learning, Beginning teachers, Collaborative learning, Comparative studies, Induction, Induction programmes, Learning approaches, Teacher

Interest group: SIG 11 - Teaching and Teacher Education

Chairperson: Tiina Soini-Ikonen, Finland

Discussant: Mareike Kunter

(Director at the Department Teacher and Teaching Quality at the DIPF| Leibniz-Institute for Research and Information in Education & Professor for Empirical Educational Research with a Focus on Professional Behaviors of Educators at Goethe University Frankfurt)

This symposium examines early career teachers' (ECTs') professional agency, learning, and wellbeing across four European countries: Finland, Sweden, the Netherlands, and the UK. Drawing on theoretical and empirical studies from the *Early Career Teachers' Professional Agency Across Four European Countries – Key for Sustainable Educational Change?* (Academy of Finland, 2018–2022) project, the symposium provides a multidimensional understanding of how ECTs learn, act, and thrive in diverse educational contexts. The papers collectively demonstrate that professional agency in terms of growing and developing as a teacher is crucial for both professional learning and wellbeing. Findings highlight the importance of collegial collaboration and participative leadership. During the Covid-19 pandemic, ECTs demonstrated resilience and transformative learning through crisis-related challenges. Together, the studies underline that strengthening ECTs' professional agency is vital for promoting teacher wellbeing, retention and a key for organizing support through coherent induction systems that foster meaningful learning opportunities.

Early Career Teachers' Professional Agency in the Classroom and Socio-contextual Burnout

Presenting Author:Roosa Yli-Pietilä, Tampere University, Finland; **Co-Author:**Kirsi Pyhältö, University of Helsinki, Finland; **Co-Author:**Janne Pietarinen, University of Eastern Finland, Finland; **Co-Author:**Auli Toom, University of Helsinki, Finland; **Co-Author:**Arniika Kuusisto, University of Helsinki, Finland; **Co-Author:**Tiina Soini-Ikonen, Tampere University, Finland

This study examines early career teachers' (ECT) professional agency in relation to socio-contextual burnout in four European countries: the UK, the Netherlands, Finland, and Sweden. Teachers' professional agency is shown to relate to their work-related well-being, but little is known about the contextual conditions that support ECTs' agentic classroom learning and their experiences of burnout across countries. The aim of this study was to find out if these experiences of agency and burnout vary between countries and if they are interrelated. A total of 3814 ECTs responded to the survey, and the data were analysed using structural equation modelling. We found that the scales of teachers' professional agency and socio-contextual burnout were invariant and related to each other across the countries. In particular, the aim of ECTs to build a collaborative environment and transform classroom practices with students were found to hold potential to tackle burnout in the four countries examined.

Engaging ECTs in Collective Decision Making Supports Their Professional Learning and Agency

Presenting Author:Kirsi Pyhältö, University of Helsinki, Finland; **Co-Author:**Jan Vermunt, University of Limassol, Cyprus; **Co-Author:**Roosa Yli-Pietilä, Tampere University, Finland; **Co-Author:**Peter Dudley, University of Cambridge, United Kingdom; **Co-Author:**Riikka Hofmann, University of Cambridge, United Kingdom; **Co-Author:**Auli Toom, University of Helsinki, Finland; **Co-Author:**Janne Pietarinen, University of Eastern Finland, Finland; **Co-Author:**Kaisa Haverinen, University of Eastern Finland, Finland; **Co-Author:**Arniika Kuusisto, University of Helsinki, Finland; **Co-Author:**Tiina Soini-Ikonen, Tampere University, Finland

This study investigated the interrelations between early career teacher (ECT) experiences of learning, professional agency and school leadership in the UK, the Netherlands, Finland, and Sweden (n=3,814). The study focused on how teachers learn in their settings of practice and how the practices and structures at schools can support ECT adaptation and professional learning. The results show school leadership, teacher learning and professional agency in the classroom are linked: participative decision-making promotes meaning-oriented teacher learning, stimulating reflection in the classroom. It also reduces problematic teacher learning, encouraging collaboration with colleagues and facilitating transformation of classroom practice.

The study shows that inclusive school cultures, supportive policies for teacher participation, and collaborative-focused teacher education are vital. Participative practices help early career teachers develop reflection, adaptability, and professional empowerment.

Presenting Author:Tiina Soini-Ikonen, Tampere University, Finland; **Co-Author:**Janne Pietarinen, University of Eastern Finland, Finland; **Co-Author:**Emmi

Saariaho-Räsänen, University of Turku, Finland; **Co-Author:**Ville Jokela, Tampereen yliopisto, Finland; **Co-Author:**Arniika Kuusisto, University of Helsinki, Finland; **Co-Author:**Kirsi Pyhältö, University of Helsinki, Finland; **Co-Author:**Auli Toom, University of Helsinki, Finland; **Co-Author:**Peter Dudley, University of Cambridge, United Kingdom

This study explores the effects of the Covid-19-pandemic on early career teachers (ECTs), especially in terms of their relationships and interaction with students and colleagues. Open survey questions and follow-up interviews were collected in Sweden, Finland, Netherlands, and the UK. Altogether 2,344 ECTs responded to the survey and 87 of them participated in the interviews conducted in 2020-2021. Survey results show that although the great majority of ECTs had experienced the pandemic negatively and challenging, in the interviews they reported many instances of having successfully overcome problems. These were seen as moments of powerful teacher learning and both self- and collective efficacy.

Becoming a Teacher: Theoretical Reflections on Professional Agency

Presenting Author:Tiina Soini-Ikonen, Tampere University, Finland; **Co-Author:**Roosa Yli-Pietilä, Tampere University, Finland; **Co-Author:**Douwe Beijaard, Eindhoven University of Technology, Netherlands; **Co-Author:**Henrika Anttila, University of Helsinki, Finland; **Co-Author:**Janne Pietarinen, University of Eastern Finland, Finland; **Co-Author:**Kirsi Pyhältö, University of Helsinki, Finland; **Co-Author:**Auli Toom, University of Helsinki, Finland

This theoretical paper explores early career teachers' (ECTs') professional agency in terms of professional learning and wellbeing. Drawing on educational and socio-contextual approaches, it conceptualises professional agency as teachers' capacity for change. Active professional learning can be both a precondition and an outcome of agency: through collaborative inquiry and professional judgement in adapting teaching for all learners, teachers build agency that, in turn, strengthens their efficacy, motivation, and capacity to learn. Teacher identity relates to agency by guiding how teachers make sense of their roles and choices. At the same time, engaging in agentic actions may shape their evolving sense of professional identity. The paper argues that induction structures should prioritise learning opportunities rather than the deficiencies of ECTs. It concludes by calling for coherent, system-level support that sustains teachers' wellbeing, active learning, and professional agency throughout their careers.

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Porthania P673
Symposium
Higher Education

Advancing the Assessment of Critical Thinking in Higher Education: Validity and Comparability

Keywords: Assessment methods and tools, Comparative studies, Critical thinking, Higher education, Mixed methods, Qualitative methods, Quantitative methods

Interest group: SIG 04 - Higher Education

Chairperson: Olga Zlatkin-Troitschanskaia, Johannes Gutenberg University Mainz, Germany

Organiser: Natalia Ronderos, University of Zurich, Institute of Education, Switzerland

Discussant: HENRY BRAUN, United States

This international symposium brings together contributions on the assessment of critical thinking from scholars from the United States, Germany, Switzerland, and Colombia. It examines critical thinking assessment at national and cross-national levels, addressing the validity of score interpretations across multiple layers—students, programs, institutions, and cross-national inferences—and from diverse methodological perspectives, which will be integrated by the discussant. Papers 1–3 focus on national-level projects in the US, Colombia, and Germany and use quantitative methods including correlations, Generalizability Theory, factor analysis, and qualitative analyses of think-aloud protocols. Paper 4 draws on a cross-national effort combining data from Switzerland and Colombia and integrating multiple sources of evidence through mixed methods. Together, the contributions offer a comprehensive picture of current work on assessing critical thinking in higher education.

Capturing the associations among critical thinking and character traits at a Jesuit college

Presenting Author:HENRY BRAUN, BOSTON COLLEGE, United States; **Co-Author:**Shaun Dougherty, Boston College, United States

Many institutions of higher education in the US, particularly those with a religious affiliation, declare that their goal is to prepare students for life after college not only by helping them to developing discipline-specific skills, but also by supporting the cultivation of broadly applicable, generic skills and certain character traits. This presentation will discuss findings obtained from a small convenience sample drawn from a religiously affiliated college in the US Northeast. Students were administered a battery of three instruments: (i) An open-ended measure of critical thinking adapted from the Reflective-Judgment Interview; (ii) A multiple choice measure of intellectual humility; (iii) A novel measure of 'Living a Life of Meaning and Purpose' based on the implementation of Rasch-Guttman scaling. The presentation will define the constructs, describe the instruments, display the results (including pair-wise correlations), and indicate potential uses in capturing student development over time.

Reliability and Validity of a Large-Scale Critical Thinking Performance Assessment

Presenting Author:Joaquín Castillo Ungar, Universidad de los Andes, Colombia; **Co-Author:**Julian Mariño, Universidad de los Andes, Colombia; **Co-Author:**Camilo Lopez, Universidad de los Andes, Colombia; **Co-Author:**Maria Orduz, Universidad de los Andes, Colombia; **Co-Author:**Elvia Sanchez, Universidad de los Andes, Colombia; **Co-Author:**Juan Jaccobo Garzon, Universidad de los Andes, Colombia

Over the past two and half years, the Evaluation Center at [Blinded University] has administered a critical thinking performance assessment to more than 6,000 of its undergraduate students. In the assessment, each examinee produces written responses to three questions about a problematic situation presented through multiple sources. These responses have been coded by trained evaluators along 9 to 11 criteria. Over these years, two different problematic situations and 4 variations of the set of criteria have been used. This paper examines the reliability and validity of the assessment. Reliability is explored through Generalizability Theory considering as facets the questions, the criteria, and the coders. Validity is studied through factor analysis, examining the structure of the criteria's scores, and their associations with other students' scores. Together, these analyses provide a comprehensive evaluation of the assessment's measurement quality over time.

Recognizing and Considering Conflicting Perspectives in Critical Thinking

Presenting Author:Thiemo Hagen, Johannes Gutenberg University Mainz, Germany; **Co-Author:**Olga Zlatkin-Troitschanskaia, Johannes Gutenberg University Mainz, Germany; **Co-Author:**Dominik Braunheim, Johannes Gutenberg-Universität, Germany; **Co-Author:**Katharina Depré, Johannes Gutenberg-Universität Mainz, Germany; **Co-Author:**Richard Shavelson, Stanford University, United States

Critical Thinking (CT) is a key competence for higher education students, particularly when reasoning with multiple and potentially biased information sources. To enable valid diagnosis and targeted promotion of CT, an international consortium developed a scenario-based performance assessment (PA) on migration regulation. In a German Cognitive Lab study, students (N = 10) completed the PA while thinking aloud. This paper focuses on the CT facet "Recognizing and considering consequences," examining how students identify and reflect on conflicts of interest and different perspectives. A qualitative content analysis of 510 think-aloud segments showed frequent perspective-taking, but less frequent identification and consideration of conflicts. While students engaged verbally with all perspectives, few integrated them in their written responses. Findings highlight the value of combining process- and product-based assessment to capture reasoning quality and inform instruction, emphasizing support for balancing conflicting perspectives in complex, information-rich contexts.

On the Feasibility of Cross-national Performance Assessments of Critical Thinking

Presenting Author:Natalia Ronderos, University of Zurich, Institute of Education, Switzerland; **Co-Author:**Doreen Flick-Holtzsch, Institute of Education, University of Zurich, Switzerland; **Co-Author:**Richard Shavelson, Stanford University, United States

Globalization and the internationalization of higher education have brought issues of accountability to the forefront, along with corresponding challenges for comparable measurement of global outcomes such as critical thinking. We draw on an Assessment Square with vertices construct, assessment, observation, and score interpretation (Shavelson et al., 2003), and examine the feasibility of cross-national comparability of a critical thinking performance assessment, "Migrants." The study, with teacher-education students in Switzerland and Colombia, integrates multiple sources of evidence—curriculum analysis, process-data from collaborative test development and adaptation processes, and cognitive laboratory data—to address all vertices of the framework. We found that the assessment was perceived as authentic for both country samples, and the data support within-country validity and partial cross-national comparability claims. We discuss implications for designing locally relevant yet comparable cross-national assessments of critical thinking and highlight the need to consider consequential validity in future work.

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Academic Development of Teacher Educators: Individual Agency and Institutional Development

Keywords: Adaptive expertise, Adaptive performance, Collaborative learning, Design based research, Higher education, Motivation, Reflection, Teacher educator professional development, Teacher professional development, Teaching innovation or innovative teaching practices

Interest group: SIG 04 - Higher Education, SIG 11 - Teaching and Teacher Education

Chairperson: Katharina Schild, Thurgau University of Teacher Education, Switzerland

Organiser: Franziska Zellweger, Zurich University of Teacher Education, Switzerland

Discussant: Ruben Vanderlinde, Ghent University, Belgium

While academic development has become a well-established field in higher education, systematic reflection on the academic development in teacher education remains surprisingly limited (Lunenberg et al., 2014). Yet, teacher educators occupy distinct roles and responsibilities, e.g., as “teachers of teachers” or as “knowledge brokers” at the interface between universities and professional practice in the school field. Connecting these strands of research, this symposium explores how professional development for teacher educators can be conceptualized and supported at both structural and individual levels. The contributions in this symposium outline an agenda for teacher educator development that links institutional frameworks, individual learning agency, adaptive expertise, and epistemic reflexivity, laying the groundwork for a more coherent and future-oriented academic development in teacher education. References:

Lunenberg, M., Dengerink, J., & Korthagen, F. (2014). *The Professional Teacher Educator: Roles, Behaviour, and Professional Development of Teacher Educators*. Rotterdam: Sense Publishers.

Roles of teacher educators: Framework to support teacher educator career development in teaching

Presenting Author: Franziska Zellweger, Zurich University of Teacher Education, Switzerland; **Co-Author:** Liana Pirovino, Pädagogische Hochschule Zürich, Switzerland; **Co-Author:** Christine Neresheimer, Zurich University of Teacher Education, Switzerland; **Co-Author:** Kristel Ross, Zurich University of Teacher Education, Switzerland

Swiss Universities of Teacher Education have undergone 25 years of integration into the tertiary sector, accompanied by growing expectations regarding research and teaching. In response, differentiated staff categories and career pathways are being introduced, yet a context-sensitive, development-oriented framework to support these processes is still missing. Existing academic development models define standards that make teaching quality visible and formally recognised (e.g., van Dijk et al., 2020), but have been criticised for reducing teaching to technical competence (Beighton, 2025). Parallel to this debate, research on Teacher Educator Development has elaborated role-based conceptualisations specific to teacher education (Lunenberg et al., 2014). This case study combines both strands as well as stakeholder perspectives to design a framework that integrates career development in teaching and research, while recognising the relational and situated responsibilities of teacher educators. It seeks to support individuals and teams in navigating emerging challenges and offers a basis for meaningful, developmental dialogue.

Balancing Agency and Sharing in Teacher Educator Development: Two Swiss Cases

Presenting Author: Doris Ittner, University of Teacher Education Bern, Switzerland; **Presenting Author:** Katharina Schild, Thurgau University of Teacher Education, Switzerland

The establishment of Universities of Teacher Education (UTE) in Switzerland has created new academic roles requiring both disciplinary expertise and teaching experience. Yet, many institutions lack coherent frameworks for faculty professionalization. This study examines two Swiss case studies at Thurgau and Bern University of Teacher Education to explore how teacher educators' professional development can be supported. Using a mixed-methods design, we conducted a qualitative stakeholder analysis with 22 interviews (N=35) and a quantitative faculty survey (N=89) to analyze motivational and organizational drivers of professional growth. Findings reveal a dual dynamic: participation in professional learning depends on the perceived relevance and flexibility of opportunities, while knowledge sharing relies primarily on an institutional culture that values collaboration. Effective professionalization thus requires a dual strategy that fosters both, individual agency in knowledge acquisition and collective capacity for knowledge sharing. Such an integrated approach can strengthen teacher education institutions as professional learning communities.

Teachers' reflections on adaptive performance in higher education

Presenting Author: Despoina Georgiou, Utrecht University, Netherlands; **Co-Author:** Lisette van Bruggen, UMC Utrecht, Netherlands; **Co-Author:** Helena Pennings, HAN University of Applied Sciences & Radboud University, Netherlands; **Co-Author:** Lars De Vreugd, University Medical Center Utrecht, Netherlands; **Co-Author:** Nico den Breejen, University Medical Center Utrecht, Netherlands; **Co-Author:** Marieke van den Schaaf, Utrecht University, Netherlands

Teaching in higher education is complex and unpredictable. It requires not only well-established routines but also innovation, including adaptive expertise, the capacity to respond effectively to novel or changing situations. Developing adaptive expertise relies on meaningful situational experiences and systematic reflection, yet opportunities for such reflection are often limited in professional development programs. This study examines how higher education teachers understand their adaptive performance, the practical expression of adaptive expertise, and identifies the teaching situations that most demand it. We conducted interviews with novice (n = 18) and experienced (n = 20) teachers, followed by a Q-methodology study (n = 93). Findings show that teachers vary in how they conceptualize adaptive performance and that it is often triggered by confronting challenging or unexpected situations. The teachers also described scenarios requiring adaptive performance. The study demonstrates how structured reflection, supported by Q-sort methodology, can help stimulate teachers' adaptive expertise.

Meta-Reflexivity as a Requirement for Teacher Educators in Fragmented Teacher Education Systems

Presenting Author: Colin Cramer, University of Konstanz and Thurgau University of Teacher Education, Germany

The preparation of teachers is understood as professionalization enabling the exercise of a pedagogical profession (Tatto, 2021). Yet, systematic reflection on the academic development of teacher educators remains limited. A key question concerns the staff responsible within universities and continuing professional development. The theoretical concept of meta-reflexivity relates previously competing strategies of teacher professionalization (Cramer et al., 2023), initially conceived as a demand on pre-service teachers. This contribution shifts the focus to teacher educators. It examines whether the ability to relate diverse scholarly content and research traditions within a coherent framework is considered a prerequisite of teacher educators. The varied academic socialization of academic staff and the professional background of teacher educators in continuing professional development are potential sources for multi-paradigmatic approaches—fostering reflection, collaboration, and innovation at the interface of academic knowledge and educational practice in teacher education and academic development.

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Language Center 203
Symposium
Higher Education

AI in higher education: self-efficacy, collaborative learning, and pedagogical orientations

Keywords: AI in higher education, Artificial intelligence, Attitudes and beliefs, Collaborative learning, Higher education, Learning analytics, Qualitative methods, Self-efficacy, Teacher professional development

Interest group: SIG 04 - Higher Education

Chairperson: Sirkku Lähdesmäki, University of Eastern Finland, Finland

Discussant: Heidi Hyytinen, University of Eastern Finland, Finland

This symposium examines how artificial intelligence (AI) reshapes higher education via three complementary studies. The first study investigates predictors of AI self-efficacy among university students, using structural equation modeling on survey data to explore the roles of AI literacy, trust, and AI use. The second study focuses on practice-based learning in legal education, analyzing how multimodal learning analytics and generative AI scaffold collaboration and progress. The third study examines university teachers' approaches to AI-supported teaching through narrative analysis, developing orientation descriptions that serve as reflective tools for teacher training. Together, these studies reveal polarized attitudes, evolving practices, and urgent needs for AI integration in teaching and learning. This symposium offers concrete pathways for intentional, evidence-informed AI integration across university teaching and learning, as well as insights for institutional AI guidelines and future research.

Understanding Students' AI Self-Efficacy: Evidence from a German Higher Education Context

Presenting Author: Maria Zirenko, Goethe-University Frankfurt, Institute of Psychology, Germany; **Co-Author:** Sabine Fabriz, Goethe-Universität Frankfurt,

Germany; **Co-Author:**Sittipan Yotyodying, Goethe University Frankfurt; Institute of Psychology, Germany; **Co-Author:**Holger Horz, Goethe-University Frankfurt, Institute of Psychology, Germany

As artificial intelligence (AI) is increasingly present in educational and professional domains, understanding factors that shape individuals' readiness to engage with AI technologies becomes essential. AI literacy has been conceptualized as a combination of knowledge, skills, and attitudes that allow individuals to engage with AI systems effectively, critically, and ethically. AI self-efficacy, an individual's belief in their capability to utilize new AI systems effectively, is associated with a higher likelihood of exploring and adopting emerging AI. TAM model provides a framework for embedding AI self-efficacy. This study investigates the predictors of AI-related self-efficacy among higher education students. Drawing on data collected from a German university sample (N = 253), an SEM is employed to examine the extent to which AI literacy, trust in AI, AI use, and TAM variables predict students' AI self-efficacy. Overall, the hypothesized model demonstrated a good fit, however, PEOU was not significantly associated with AI self-efficacy.

Rethinking Learning and Collaboration in the Age of Generative AI

Presenting Author:Crina Damsa, University of Oslo, Norway; **Co-Author:**Rogers Kaliisa, University of Oslo, Faculty of Education, Norway; **Co-Author:**Velibor Mladenovici, West University of Timisoara, Romania

In this investigation, we examined how multimodal learning analytics (MMLA) and genAI (genAI) scaffold practice-based learning in undergraduate legal education. We conducted a qualitative analysis of how students collaboratively interacted with AI-generated materials and how they perceived its value for their own and their peers' learning progress. Following two design-based research iterations over 12 weeks, 28 students completed stakeholder projects. In teams of 3-5, they conducted problem identification, analysis, literature review, legal-tech prototyping, and reporting. Data included meeting videos, activity logs, reflection surveys, interviews, and reports. We processed the observation and reflection data and visualized them in an MMLA-genAI dashboard prototype designed to support reflection on student collaboration and progress. Overall, students placed the highest value on indicators related to the quality of collaborative input and dynamics of collaboration. The study offers design insight for AI-enabled feedback and dashboards in higher education, along with suggestions for collaborative learning.

Teachers' Pedagogical AI Orientations: Supporting Reflection on AI Use in Higher Education Teaching

Presenting Author:Sirkku Lähdesmäki, University of Eastern Finland, Finland

The rapid rise of artificial intelligence (AI) in higher education makes it urgent to understand university teachers' orientations toward AI-supported teaching, to guide pedagogical development and targeted professional training. This study explores narratives from 66 university teachers, focusing on adopting AI for teaching. The data comprises written open-ended responses, analyzed through narrative plot analysis to identify the structures and meanings within the stories. The analysis yielded six prototypical narratives: rejecting, orienting, initiating, experimenting, innovating, and integrating. Building on these, the study produced pedagogical AI orientation descriptions of university teachers. The findings reveal a notable polarization in teachers' use of AI in teaching. These descriptions serve as mirrors through which teachers can reflect on their own relationship with the use of AI in teaching. They can be used in teacher training to help teachers reflect on their position and identify needs for competence development in AI-supported teaching.

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Language Center 204

Symposium

Higher Education, Learning and Social Interaction

Learning together: The role of peers in higher and teacher education

Keywords: Collaborative learning, Higher education, Informal learning, Motivation and emotion, Peer interaction, Psychometrics, Self-efficacy, Student learning, Teacher education, Teacher professional development, Teaching approaches

Interest group: SIG 04 - Higher Education

Chairperson: Izaak Dekker, Amsterdam University of Applied Sciences (AUAS), Netherlands

Organiser: Izaak Dekker, Amsterdam University of Applied Sciences (AUAS), Netherlands

Discussant: Milla Räisänen, University of Helsinki, Finland

Peer students and peer teachers influence learning and sense of belonging in higher and teacher education. This symposium combines insights, review data (paper 3), and empirical data from the Netherlands (paper 1), Norway (paper 2), and Sweden (paper 4) on the dynamics between informal and formal peer interactions, student belonging, wellbeing, and learning. It shows how collaboration in tutorial groups, belonging, and self-efficacy influence the formation of social ties (paper 1), how student teachers' loneliness is mitigated through their sense of belonging and peer interaction (paper 2), how students are prepared for teaching their peers and how this affects both peers and peer teachers (paper 3), and lastly, it presents a scale that measures transferable skills obtained through peer-learning (paper 4). These contributions illuminate how peers can formally and informally shape the study experience of students and will be discussed by an expert on peer learning and support from Finland.

Development and validation of a transferable peer learning skills scale

Presenting Author:Izaak Dekker, Amsterdam University of Applied Sciences (AUAS), Netherlands; **Co-Author:**Joakim Malm, Lund University, Sweden; **Co-Author:**Michelle Whitford, Torrens University, Australia; **Co-Author:**William Carey, Lund University / Loughborough University, Sweden

This study developed and validated a brief scale measuring transferable skills acquired through Supplemental Instruction and Peer Assisted Study Sessions (SI-PASS). While SI-PASS improves academic outcomes, no psychometrically sound instrument existed to assess transferable skill development. Through consultation with international experts and participants, researchers identified two core skills: communication and collaboration, and study strategies. An initial 19-item scale was refined to 11 items and tested using exploratory (n=194) and confirmatory factor analysis (n=605) with Swedish university students. The two-factor model demonstrated good fit (CFI=.959, TLI=.947, RMSEA=.062) and reliability (Cronbach's α =.85-.92). Participants reported developing these skills through SI-PASS, with attendance significantly predicting higher scores. The scale showed expected correlations with employability measures and negative correlations with traditional classroom engagement, confirming construct validity. This instrument enables institutions to evaluate SI-PASS beyond academics, demonstrating its value for graduate employability.

Preparing students for near-peer teaching and its outcomes: A systematic literature review

Presenting Author:Marieke Thurlings, Eindhoven University of Technology, Netherlands; **Co-Author:**Laurie Delnoij, Maastricht University SBE, Ts 53, Netherlands; **Co-Author:**Izaak Dekker, Amsterdam University of Applied Sciences (AUAS), Netherlands; **Co-Author:**Jan Van der Veen, Eindhoven University of Technology, Netherlands

Students in Higher education that are involved in near-peer teaching tasks – that is to guide younger students in their learning processes – need to be trained. This systematic literature review aims to describe training programs for the near-peer teachers and to evaluate what the essential elements of such training are. The review also aims to map the outcomes for both near-peer teachers and their students. Based on an extensive search and eligibility criteria, 210 studies were included. Findings show that training becomes more effective when modelling, practicing, feedback and supervision are incorporated; and that near-peer teaching promotes learning and the development of general and specific skills. As training programs seems to lack a theoretical basis, we call for collaboration between educationalists, educational researchers, and those developing and evaluating training programs for near-peer teaching.

The joint development of peer networks, sense of belonging, and academic self-efficacy

Presenting Author:Pieter van Lamoen, Erasmus University Rotterdam, the Netherlands, Netherlands; **Co-Author:**Marieke Meeuwisse, Erasmus University Rotterdam, Netherlands; **Co-Author:**Annemarie Hiemstra, Erasmus University Rotterdam, Netherlands; **Co-Author:**Jasperina Brouwer, University of Groningen, Netherlands

Peer relationships are central to international students' learning and sense of belonging in higher education. This longitudinal social network study investigates how academic self-efficacy and sense of belonging shape, and are shaped by, friendship and collaboration networks among 289 international students enrolled in a Dutch bachelor's program. Data were collected across three waves during the first semester and analysed using stochastic actor-oriented models (SAOMs). Results show that tutorial groups facilitate initial tie formation, and that cross-network dynamics play an important role in network development. A higher sense of belonging increased the likelihood of forming collaboration ties, whereas higher self-efficacy decreased the likelihood of initiating collaboration or friendship ties. Students were also less likely to select highly self-efficacious peers as partners. These findings highlight the links between psychosocial factors and peer network development, underscoring the importance of fostering belonging and academic self-efficacy in diverse learning contexts.

Belonging matters: The role of program context in students' loneliness

Presenting Author:Esther Canrinus, University of Agder, Norway; **Co-Author:**Mareike Brehmer, University of Agder, Norway; **Co-Author:**Adina Nydahl, University of Agder, Norway

One third of students in Norway feel very or extremely lonely, increasing risks of anxiety, depression, and suicide. Student teachers are no exception in having to find their social environment at the start of their studies. How educational programs are arranged can affect the social environments first year students experience. This study investigates loneliness and sense of belonging in 211 students from three teacher education programs at one university. Survey-data from wave one (September 2025) indicate that the sense of belonging to fellow students ($\beta = -.45$, p

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Porthania P724
Collaborative Space
Assessment and Evaluation

Problem-based tasks for testing and promoting financial literacy through teachers

Keywords: Achievement, Assessment methods and tools, Problem-based learning, Teacher education

Interest group: SIG 11 - Teaching and Teacher Education

Financial literacy is a key skill for the 21st century. It enables individuals to make informed financial decisions. Despite the importance of financial literacy, it can be observed that especially young adults do not understand key financial concepts. Therefore, financial education should be included in school curricula. However, beyond curriculum development, appropriate support also requires the suitable design of teaching and learning processes. This again should be based on reliable diagnostics to identify individual needs. The first goal of our research is therefore to develop a test instrument that can be used to measure financial literacy of young adults in a comprehensive manner. The development is based on authentic complex problem situations that are relevant to the lives of young adults. The items are presented in the form of technology-based situational judgment tests A second goal is to use these problem-based tasks as learning tasks to promote financial literacy.

Problem-based tasks for testing and promoting financial literacy through teachers

Presenting Author: Vinzent Weber, Goethe-University Frankfurt, Germany; **Presenting Author:** Eveline Wuttke, Goethe-Universität Frankfurt, Germany; **Co-Author:** Andreas Emter, Universität Potsdam, Germany; **Co-Author:** Johann Faltermeier, OTH Amberg Weiden, Germany; **Co-Author:** Manuel Förster, Technical University of Munich, Germany; **Co-Author:** Baerbel Fuerstenau, TU Dresden, Germany; **Co-Author:** Roland Happ, Leipzig University, Germany; **Co-Author:** Josseline Stock, Leipzig University, Germany; **Co-Author:** Mandy Hommel, OTH Amberg-Weiden, Germany; **Co-Author:** Andreas Kraitzek, Technical University Munich, Germany; **Co-Author:** Jessica Nitsch, TU Dresden, Germany; **Co-Author:** Christin Siegfried, Universität Potsdam, Germany

Financial literacy is a key skill for the 21st century. It enables individuals to make informed financial decisions. Despite the importance of financial literacy, it can be observed that especially young adults do not understand key financial concepts. Therefore, financial education should be included in school curricula. However, beyond curriculum development, appropriate support also requires the suitable design of teaching and learning processes. This again should be based on reliable diagnostics to identify individual needs. The first goal of our research is therefore to develop a test instrument that can be used to measure financial literacy of young adults in a comprehensive manner. The development is based on authentic complex problem situations that are relevant to the lives of young adults. The items are presented in the form of technology-based situational judgment tests A second goal is to use these problem-based tasks as learning tasks to promote financial literacy.

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Main Building, U4075
Collaborative Space
Teaching and Teacher Education

Student Agency Challenge: Developing a game to foster student agency

Keywords: Game-based learning, Higher education, Practitioner research, Teaching approaches

Interest group: SIG 11 - Teaching and Teacher Education

Middle and higher vocational education aims to prepare students for lifelong learning and complex issues through innovative and flexible education. However, teachers observe that many students struggle with agency, which hinders their optimal functioning in innovative and flexible learning environments. Unfortunately, tools for developing student agency are not yet sufficiently available. Therefore, the serious game Student Agency Challenge was developed, based on a predecessor game for professional agency. The Challenge supports students in identifying specific aspects of their life that require agency, determining which aspects are needed, and choosing and developing strategies to strengthen their agency in that situation. During this workshop participants will experience working with the Student Agency Challenge and reflect on its potential for supporting student agency in their own professional contexts. The game is freely available and is suitable for a variety of educational settings.

Student Agency Challenge: Developing a game to foster student agency

Presenting Author: Kyle van den Langenberg, HAN University Nijmegen, Netherlands; **Co-Author:** Harry Stokhof, HAN University of Applied Sciences, Netherlands; **Co-Author:** Helma Oolbekkink-Marchand, HAN University of Applied Sciences, Netherlands

Middle and higher vocational education aims to prepare students for lifelong learning and complex issues through innovative and flexible education. However, teachers observe that many students struggle with agency, which hinders their optimal functioning in innovative and flexible learning environments. Unfortunately, tools for developing student agency are not yet sufficiently available. Therefore, the serious game Student Agency Challenge was developed, based on a predecessor game for professional agency. The Challenge supports students in identifying specific aspects of their life that require agency, determining which aspects are needed, and choosing and developing strategies to strengthen their agency in that situation. During this workshop participants will experience working with the Student Agency Challenge and reflect on its potential for supporting student agency in their own professional contexts. The game is freely available and is suitable for a variety of educational settings.

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Language Center 203
Symposium
Higher Education

How do students adapt their learning to innovative pedagogies?

Keywords: Adaptive learning, AI in higher education, Challenge-based learning, Collaborative learning, Higher education, Learning approaches, Motivation, Qualitative methods, Quantitative methods, Self-regulation, Student learning, Teaching innovation or innovative teaching practices

Interest group: SIG 04 - Higher Education

Chairperson: Jan Vermunt, Cyprus

Organiser: Karolina Doulougeri, Eindhoven School of Education, Netherlands

Organiser: Jan Vermunt, Cyprus

Discussant: Kirsti Lonka, University of Helsinki, Finland

Innovative pedagogies, such as challenge-, project-, design-, and inquiry-based learning, present students with open-ended, uncertain problems that require them to actively determine how they learn. Yet students vary considerably in how they respond to these demands. This symposium brings together contributions from different countries examining how students adapt their learning within such environments, considering individual, team, and technological dimensions. Evidence from a course redesign into challenge-based learning shows shifts in students' motivation, strategy use, and learning outcomes (Contribution 1), while work in design-based education demonstrates how deep and organized learning approaches support proactive study-crafting and engagement (Contribution 2). Qualitative findings discuss how self- and shared regulation strategies evolve within challenge-based learning teams (Contribution 3). Finally, latent student profiles integrating AI literacy with learning-strategy use suggest differentiated support needs in AI-rich contexts (Contribution 4). This symposium deepens our understanding of how students learn and adapt in dynamic, innovative environments.

Redesigning to CBL - Effects on Student Motivation, Learning Strategies, and Outcomes

Presenting Author: Kerstin Helker-Schlotmann, CBS University of Applied Sciences, Germany; **Co-Author:** Isabelle Reymen, Eindhoven University of

Technology, Netherlands; **Co-Author:**Miguel Bruns, Eindhoven University of Technology, Netherlands; **Co-Author:**Jan Vermunt, University of Limassol, Cyprus

Challenge-Based Learning (CBL) has gained popularity in higher education, allowing students to take the lead in their own learning through autonomously working on authentic and real-life challenges. Claims are that CBL fosters student motivation, their employment of more beneficial learning strategies, and ultimately their learning outcomes. This study explores these claims by systematically comparing the original and a CBL re-design of an elective technology entrepreneurship course for engineering students. Data were collected at the beginning, in the middle, and at the end of the two versions of the course. Findings reveal significant differences in students' perception of the learning environment of the courses and a close interplay of students' employment of learning strategies with aspects of the learning environment and shows CBL students' motivation to be higher at the beginning of the course. Students high in motivation were found to employ beneficial learning strategies more, which calls for teachers' actions.

From Learning Approaches to Engagement in HE: Proactive Learning Through Study Crafting

Presenting Author:Merly Kosenkranius, Häme University of Applied Sciences, Finland; **Co-Author:**Sara Rönkkönen, Häme University of Applied Sciences, Finland, Finland; **Co-Author:**Telle Hailikari, Häme University of Applied Sciences, Finland, Finland; **Co-Author:**Viivi Virtanen, Häme University of Applied Sciences, Finland

This study explores how students' learning approaches relate to study crafting and engagement within a design-based education (DBE) context. DBE emphasizes collaborative, real-world problem solving, encouraging students to actively shape their learning. Study crafting means students' proactive efforts to align their study environments with personal strengths and goals. Using survey data from 553 Finnish university of applied sciences students, we examined the relationships between learning approaches, study crafting, and engagement. Results showed that deep and organized approaches were associated with more crafting for structural and social resources and challenging demands, while the unreflective approach was negatively associated with crafting and engagement. Only crafting for structural resources was significantly associated with study engagement and mediated the effects of learning approaches. These findings highlight the importance of fostering deep and organized learning to support proactive student behaviors and engagement in learner-centered environments. Implications for educational design and self-regulated learning are discussed.

From Self to Shared Regulation: A Thematic Trajectory Analysis of Challenge-Based Learning Teams

Presenting Author:Karolina Doulougeri, Eindhoven School of Education, Netherlands; **Co-Author:**Weiwei Li, Eindhoven University of Technology, Netherlands; **Co-Author:**Michael Bots, Politie Academie, Netherlands; **Co-Author:**Gunter Bombaerts, Eindhoven University of Technology, Netherlands; **Co-Author:**Jan Vermunt, University of Limassol, Cyprus

This study examines how self- and group regulation developed among 54 first-year engineering students during a challenge-based learning (CBL) course on ethics and data analytics. Each student submitted six reflections over three key points in time. Thematic trajectory analysis was used to trace how students responded to common challenges, such as understanding complex content, unclear group coordination, and time pressure, by adapting their regulation strategies over time. Early reflections (T1) showed that students relied on self-regulation when group processes were weak. Midway through the course (T2), teams introduced more structure and clearer roles in their collaboration. However, their progression diverged in the final phase (T3) with some teams advancing toward reflective and shared regulation of learning, while others remaining focused on procedural collaboration similar to T2. The findings show that shared regulation does not emerge automatically but requires scaffolding to help students moving beyond task division toward meaningful collaborative learning.

AI Literacy and Learning Strategies among University Students: A Latent Profile Analysis

Presenting Author:Mariana Crasovan, West University of Timisoara, Romania; **Co-Author:**Velibor Mladenovici, West University of Timisoara, Romania; **Co-Author:**Jan Vermunt, University of Limassol, Cyprus

This study investigated university students' learning in the current landscape of artificial intelligence (AI), focusing on their learning strategies (i.e., deep, stepwise, and concrete) and AI literacy (how they apply, understand, detect, and ethically use AI). We collected survey data from 521 students in 2025 and analyzed them using latent profile analysis. Our analysis revealed three student learning profiles of AI-integrated learning strategies: P1. *Emerging* (11.66%), P2. *Typical* (47.43%), and P3. *Advanced conceptual* (40.91%). While P1 showed a generalized weakness at all measured dimensions and significantly differed from the other two profiles, P2 and P3 differed minimally in memory- and rehearsal-related strategies and primarily in AI literacy and deep-processing learning strategies. Of the three profiles, P3 stands out as a deep-processing profile with correspondingly elevated AI literacy. These results encourage finding ways to differentiate support from foundational scaffolds (P1) to higher-order AI and critical-thinking-integrated tasks for students (P2 and P3).

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Language Center 205

Symposium

Higher Education, Teaching and Teacher Education

Conceptualising & measuring professional vision

Keywords: Cognitive skills, Diversity, Early childhood education, Higher education, Mathematics, Mixed methods, Noticing, Professional vision, Quantitative methods, Reasoning, Teacher professional development

Interest group: SIG 04 - Higher Education, SIG 11 - Teaching and Teacher Education

Chairperson: Thibaut Duthois, Ghent University, Belgium

Chairperson: Ilona Södervik, University of Helsinki, Finland

Organiser: Thibaut Duthois, Ghent University, Belgium

Organiser: Ilona Södervik, University of Helsinki, Finland

Discussant: Halszka Maria Jarodzka, Netherlands

It is widely acknowledged that the act of perceiving and reflecting on a classroom and the opportunities and critical events in it is crucial for teachers. As a concept becomes more central within a research field, it tends to attract multiple interpretations and diverse methodological approaches. Although most of approaches build upon Goodwin's original conceptualization, each methodological tradition brings its own interpretation of the underlying constructs. This raises a fundamental question for the field: Are we (un)intentionally re-conceptualizing the constructs we aim to study through our methodological choices? This question forms the foundation of a symposium that brings together researchers employing diverse methodologies and interpretations of the central constructs *noticing* and *reasoning* who are invited to reflect on how their methodological approaches have shaped their conceptualizations and to contribute to a collective effort toward aligning and advancing the field's theoretical and empirical coherence.

Development of professional vision in university teachers: a theoretical contribution

Presenting Author:Neea Heinonen, University of Eastern Finland, Finland; **Co-Author:**Ilona Södervik, University of Helsinki, Finland

This study examines how teachers' professional vision develops during university pedagogic studies and the relationship of (mis)conceptions and professional vision. Altogether 127 life science university teachers participated before and after a short pedagogical training. Professional vision was measured with a video-based task: noticing by marking timestamps for significant moments, and interpreting by verbal explanations of marked events. A questionnaire assessed teachers' (mis)conceptions of teaching and learning. Findings showed significant overall improvement in both noticing and interpreting skills, though development in noticing was uneven. Teachers with less sophisticated pedagogical conceptions improved less in identifying pedagogically significant incidents. Thus, in addition to providing valuable insights for the development of university pedagogy, the study contributes to the ongoing discussion on the construction of professional vision as one or more measurable dimensions and what this means in relation to the heterogeneity of teachers in terms of their conceptions of teaching and learning.

A gender perspective on teacher professional vision

Presenting Author:Andreas Gegenfurtner, University of Augsburg, Germany; **Co-Author:**Sylvia Gabel, University of Augsburg, Germany; **Co-Author:**Alijagic Aldin, University of Augsburg, Germany; **Co-Author:**Özün Keskin-Senkai, University of Augsburg, Germany

Current conceptualizations of teacher professional vision tend to assume that the dimensions and processes of teacher professional vision are homogenous, applicable to a wide group of teachers, deemphasizing the role of individual differences. In educational settings, however, classrooms are often characterized by high levels of teacher and student diversity. This contribution proposes a gender perspective on teacher noticing and professional vision, arguing that female and male teachers can differ in their visual and attitudinal preferences for female and male students, which can be overlooked if gender is unintentionally ignored as unit of analysis. Grounded in the cognitive theory of visual expertise, we present the results of a multi-method study using eye-tracking and attitude measures, which indicate that selective attention and noticing are not universal across teachers but are contingent on the gender of teachers and students. Implications for a gendered perspective when conceptualizing teacher professional vision are discussed.

Comparing mobile eye tracking with comparative judgement as measurements of ECE teachers' noticing

Presenting Author:Thibaut Duthois, Ghent University, Belgium; **Co-Author:**Lien Dorme, UGENT, Belgium; **Co-Author:**Maribel Montero-Perez, Ghent University, Belgium; **Co-Author:**Piet Van Avermaet, Ghent University, Belgium; **Co-Author:**Ruben Vanderlinde, Ghent University, Belgium

This study compares two distinct methodologies used to measure teacher noticing among the same group of teachers (n=49) within the same classroom context (i.e. language-stimulating interactions in early childhood education). This presentation is guided by two questions: (1) How do two methodologically divergent measures of teacher noticing correlate with each other? (2) How does the chosen measurement approach influence the conceptualization of the construct of teacher noticing? To address these questions, two measurement approaches of noticing are compared: mobile eye-tracking and comparative judgement. A Pearson correlation was calculated (RQ1) and was combined with meta-level discussion and comparison (RQ2). Results revealed minimal association between the two measures. This study explains this result by discussing similarities and differences between the two methodologies. We demonstrate that conceptual clarity can only be achieved by engaging in epistemological reflection on what is actually being measured and how this, in turn, shapes the conceptualization of teacher noticing.

Exploring mathematics teacher noticing across career stages

Presenting Author:Rebekka Stahnke, IPN Leibniz Institute for Science and Mathematics Education, Germany; **Co-Author:**Frederica Becker, Paderborn University, Germany; **Co-Author:**Julia Bruns, Paderborn University (UPB), Germany

In order to support student learning, teachers need to develop noticing skills. In the context of mathematics education, these skills are defined as knowledge-based and as comprising the perception of relevant events, interpretation of these events and decision-making about next strategies. Compared to experts, novice teachers often struggle with these skills. However, little is known about early career teachers' noticing skills. Addressing this research gap, the study explores the noticing skills of ten novice, ten intermediate, and ten expert teachers shown when observing video scenes of mathematics instruction. Epistemic network analysis was chosen as a method to reveal differences in teachers' representation of the scenes as indicators of their content-specific and knowledge-based noticing skills, showing significant differences between novices/intermediates and experts, but not between novices and intermediates. Frequency-based analysis further showed an intermediate effect with early career teachers talking more about cognitive activation than their colleagues.

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Porthania P673

Symposium

Teaching and Teacher Education

Understanding and Improving Teacher Retention: Innovation and Reflection

Keywords: Beginning teachers, Early childhood education, Educational policy, Motivation, Motivation and emotion, Pre-service teacher education, Teacher, Teacher education, Teacher professional development

Interest group: SIG 11 - Teaching and Teacher Education

Chairperson: Robert Klassen, University of Oxford, United Kingdom

Discussant: Robert Klassen, University of Oxford, United Kingdom

This symposium presents evidence across the career pipeline in four different countries. First, an Australian survey of 1,486 preservice early childhood teachers identifies three personal resource profiles and informs targeted supports. Second, a study from French Canada introduces a situational judgement test to assess and develop non-cognitive competencies during initial teacher education, aligning selection and training with retention goals. Third, a German longitudinal study of 667 early career teachers shows that basic psychological need satisfaction predicts engagement, reduces exhaustion, and lowers quitting intentions. Fourth, a qualitative study from the UK considers how organisational size, culture, and career pathways shape autonomy, competence, and belonging in the first five years of a teaching career. Together, the papers present a picture of how research can inform practice and policy in the career journey of early career teachers. Discussant Robert Klassen will synthesise findings and consider practical interventions for practice and future research.

Building and Retaining a Quality Early Childhood Teacher Workforce in Australia

Presenting Author:Tracy Durksen, University of New South Wales, Australia; **Co-Author:**Marianne Fenech, The University of Sydney, Australia; **Co-Author:**Sandie Wong, Macquarie University, Australia; **Co-Author:**Marwa Ashe, The University of New South Wales, Australia

Degree-qualified early childhood teachers (ECTs) are one of the strongest contributors to the quality of an early childhood education environment, yet in Australia, there are persistent high rates of turnover and chronic shortages. As part of the Teachers in Early Education project, this study collected survey data from 1486 students (first and final year preservice ECTs) studying at more than 42 institutions across Australia. Personal resources (self-efficacy, adaptability, resilience) were considered among key quality indicators and analysed using Job Demands-Resources theory. Findings revealed three distinct profiles (low, mid, high personal resources). This presentation will focus on final-year students (n = 727) who were more likely to fall into the low profile. Significant differences (across program types, student motivations) will be discussed in relation to retention strategies. Conclusions include timely recommendations given the current national workforce strategy and to inform policies and innovations that support ECT retention (e.g., personalised scenario-based technologies).

Rethinking Teacher Education: Non-Cognitive Skills and Retention in the Quebec Context

Presenting Author:Anne-Michele Delobbe, Université du Québec à Rimouski, Canada; **Co-Author:**Chantale Jeanrie, Université Laval, Canada

The Quebec education system is facing a teacher shortage and an initial training model that is often perceived as inadequate for preparing future teachers for real classroom challenges. This project explores the integration of non-cognitive competencies—such as empathy, resilience, and adaptability—into teacher education, as these traits are essential for teaching quality and job retention. Based on interviews with education experts, the most relevant non-cognitive traits for retention were identified and evaluated. The most influential ones were selected for the development of a Situational Judgment Test (SJT), a tool designed to assess and support the development of these competencies. The next phase will involve creating realistic scenarios to help future teachers strengthen these skills, better prepare for professional integration, and ultimately improve retention and student success.

Early Career Teachers' Intention to Quit: The Role of Basic Psychological Need Satisfaction

Presenting Author:Verena Jörg, DIPF | Leibniz Institute for Research and Information in Education, Germany; **Co-Author:**Theresa Dicke, Australian Catholic University, Australia; **Co-Author:**Mareike Kunter, DIPF | Leibniz Institute for Research and Information in Education, Germany

Amid teacher shortages and high attrition rates, understanding the factors that sustain teachers' motivation and commitment to the profession has become increasingly important, particularly among early career teachers who are at a high risk of leaving. Drawing on the Job Demands-Resources model and Self-Determination theory, this study examines how early career teachers' basic need satisfaction functions as a personal resource shaping subsequent work engagement, emotional exhaustion, and intentions to leave. Longitudinal data from 667 German early career teachers collected at four points in time (at the end of pre-service training, and one, four, and five years later) were analysed to investigate direct and indirect, concurrent and lagged effects between these variables. The results indicate that teachers' need satisfaction predicts subsequent motivation and strain, which in turn relate to their turnover intentions. While competence satisfaction fostered work engagement, teachers' feelings of relatedness emerged as the strongest negative predictor of turnover intentions.

The Five-Year-Itch: A Qualitative Study of Early Career Teachers' Motivation

Presenting Author:Rebecca Snell, University of Oxford, Norham Gardens, United Kingdom; **Co-Author:**Sophie Thompson-Lee, University of Oxford, United Kingdom; **Co-Author:**Robert Klassen, University of Oxford, United Kingdom

This paper reports emerging findings exploring how early career teachers (ECTs) experience autonomy, competence and relatedness within their working contexts. Focus group data were collected from 60 ECTs from nine secondary schools in England. Using basic psychological needs theory as an interpretive lens, the analysis highlights how organisational size, workload and cultural norms mediate teachers' experiences of agency and belonging. While many described strong classroom confidence, there was uncertainty around career progression and a reluctance to seek promotion for fear of seeming overconfident. Teachers with prior careers reported better work-life balance but reduced engagement. Findings point to the need for nuanced, context-sensitive approaches to retention that address cultural as well as structural conditions underpinning teacher motivation and professional growth.

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Main Building U4080

Collaborative Space

Teaching and Teacher Education

Agency as a Mediating Tool in the Design of Contextually Responsive Teacher Education Curricula

Keywords: Case studies, Competence development, Pre-service teacher education, Teacher professional development

Interest group: SIG 11 - Teaching and Teacher Education

This collaborative space explores Student Teacher Professional Agency (STPA) in global teacher education, drawing on comparative research in Finland and Brazil. Participants will engage with recent findings on how teacher identity negotiation, curriculum coherence (as the linkage between theory and practice), and learning environments (as the pedagogical interaction between students and teacher educators) shape agency, confronting neoliberal global policy pressures like GERM and the internationalization of teacher training. Through a structured presentation and interactive subgroup workshops, the session fosters cross-national dialogue on integrating agency into curriculum design, emphasizing contextual responsiveness and professional development. Outcomes include actionable ideas for strengthening teacher agency and preliminary steps towards an international research consortium focused on curriculum transformation.

Agency as a Mediating Tool in the Design of Contextually Responsive Teacher Education Curricula

Presenting Author:Lais Oliveira Leite, University of Eastern Finland, Finland; **Co-Author:**Sari Havu-Nuutinen, University of Eastern Finland, Finland; **Co-Author:**Erkko Sointu, University of Eastern Finland, Finland

This collaborative space explores Student Teacher Professional Agency (STPA) in global teacher education, drawing on comparative research in Finland and Brazil. Participants will engage with recent findings on how teacher identity negotiation, curriculum coherence (as the linkage between theory and practice), and learning environments (as the pedagogical interaction between students and teacher educators) shape agency, confronting neoliberal global policy pressures like GERM and the internationalization of teacher training. Through a structured presentation and interactive subgroup workshops, the session fosters cross-national dialogue on integrating agency into curriculum design, emphasizing contextual responsiveness and professional development. Outcomes include actionable ideas for strengthening teacher agency and preliminary steps towards an international research consortium focused on curriculum transformation.

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Porthania P722

Collaborative Space

Higher Education

Building Bridges Between SoTL and HER

Keywords: Higher education, Practitioner research, Teacher education, Teaching approaches

Interest group: SIG 04 - Higher Education

The Scholarship of Teaching and Learning (SoTL) and Higher Education Research (HER) both aim to enhance teaching and learning, though they have developed from different traditions. SoTL emerges from the work of educators who study their own practice, using reflection and innovation to improve learning in their classrooms. HER, meanwhile, approaches teaching and learning through broader theoretical and methodological frameworks, generating insights that inform policy and practice across institutions. This session brings together past and current coordinators of EuroSoTL and EARLI SIG04 to reflect on how bridges can be built between these two domains. Our goal is to create space for colleagues to think together about how these perspectives can enrich one another. Through active discussion in a collaborative setting, we will explore how SoTL's practice-based focus can connect with HER's wider analytical scope. Participants will leave with practical ideas and strategies for connecting these traditions and shaping future collaborations.

Building Bridges Between SoTL and HER

Presenting Author:Despoina Georgiou, Utrecht University, Netherlands; **Presenting Author:**Helga Dörner, Eötvös Loránd University, Hungary; **Presenting Author:**Robert Kordts, University of Bergen, Norway; **Co-Author:**Irma Meijerman, Utrecht University, Netherlands

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Language Center 206

Symposium

Teaching and Teacher Education

Inequality in interactions: Classroom processes as facilitators for educational inequalities

Keywords: Achievement, Cultural diversity in schools, Diversity, Primary education, Quantitative methods, Student-teacher interactions, Teacher, Teacher education, Teaching/instruction

Interest group: SIG 11 - Teaching and Teacher Education

Chairperson: Mareike Kunter, Germany

Organiser: Mareike Kunter, Germany

Organiser: Hannah Kleen, Germany

Discussant: Sigrun Ertesvåg, University of Stavanger, Norway

Educational inequalities remain a persistent challenge across international education systems. While structural and societal factors have been widely studied, less is known about how everyday classroom processes contribute to these disparities. Thus, this symposium focuses on classroom interactions and their role in contributing to inequalities. We define classroom interactions broadly, so that they encompass cognitive aspects, such as instructional practices, and affective aspects, such as relationships. In four papers, we examine how classroom interactions such as students' opportunities to participate in class, instructional explanations and teaching quality, and affective teacher-student relationships differ depending on various student-related factors such as low achievement, ethnicity, gender, and socioeconomic status, thus contributing to educational inequalities. Sigrun Karin Ertesvåg will discuss the symposium focusing on the relevance of classroom interactions to the educational opportunities of disadvantaged student groups.

Teacher Wait Time: Conditions and Consequences in Contemporary Primary School

Presenting Author:Jasmin Decristan, University of Wuppertal; IDEa-Research Center, Germany

Teacher wait time (TWT)—the time between a teacher's question and the call of a student to answer the question—is a key indicator of the pace of classroom interaction. Despite its relevance for learning, recent empirical evidence is limited. This study considers the duration and types of TWT time in 35 primary science classrooms, and it examines whether TWT relates to student or classroom composition and predicts students' learning. Results show that TWT averaged 5 seconds and was most often accompanied by verbal prompts. While TWT did not predict overall achievement, it particularly benefited students with lower prior knowledge. Findings point to the role of TWT as a compensatory instructional tool and highlight its potential for promoting educational equity in classroom learning and instruction.

Warmth and competence stereotypes in teachers' language: Bias across student gender and ethnicity

Presenting Author:Hannah Kleen, DIPF | Leibniz Institute for Research and Information in Education, Germany; **Co-Author:**Jeannette Garcia Coppersmith, Harvard Graduate School of Education, United States; **Co-Author:**Heather Hill, Harvard Graduate School of Education, United States

In this experimental study we investigated how teachers' language use reflects stereotypes based on student ethnicity and gender during mathematics instructional explanations. A sample of 324 U.S. teachers responded orally to animated classroom situations depicting students' solutions in math. Using computational linguistic analyses, teachers' responses were examined for their semantic similarity to warmth- and competence-related language. Results revealed systematic variations: female students received responses higher in both warmth and competence alignment, while responses to Black students showed slightly lower alignment on both dimensions. Interactions between instructional context and student gender indicated that teachers' language reflects stereotypical expectations. These findings highlight how subtle linguistic patterns can perpetuate educational inequalities and emphasize the need to address language bias in classroom interactions.

Teaching quality affecting changes in achievement for different groups of students

Presenting Author:Trude Nilsen, University of Oslo, Norway; **Co-Author:**Wangqiong Ye, University of Oslo, Norway; **Co-Author:**Nani Teig, University of Oslo, Norway

Teaching quality (TQ) is critical for student achievement and can widen or narrow gaps between advantaged and disadvantaged students. Disadvantaged students are more dependent on high-quality instruction, making them vulnerable to TQ variations and systemic shocks like the COVID-19 pandemic. A gap persists in understanding how large-scale changes in TQ differentially influence diverse student groups over time. This study investigates TQ changes from 2019 to 2023 and their differential effects on mathematics achievement for advantaged versus disadvantaged students. Using data from all countries in TIMSS 2019 and 2023, we employ a robust trend analysis including a multigroup structural equation model to analyze how TQ changes relate to achievement changes for groups of high- versus low-socioeconomic status. Preliminary findings show that classroom management and teacher support decreased in this time period, and that changes in classroom management were related to changes in achievement. Implications for policy and practice are discussed.

Systematic Differences in Relational Needs With Teachers Among Ethnically Diverse Students

Presenting Author:Marjolein Zee, Erasmus University Rotterdam, Netherlands; **Co-Author:**Ruben Fekkink, Universiteit van Amsterdam, Netherlands; **Co-Author:**Debora Roorda, University of Amsterdam, Netherlands; **Co-Author:**Fadie Hanna, Amsterdam University of Applied Sciences (AUAS), Netherlands

Affective student-teacher relationships are critical for students' engagement and academic success, yet ethnic minority students often experience less closeness and more conflict and unfulfilled needs in relation to their teachers. This study examined how upper elementary students from ethnic majority and minority backgrounds perceive and interpret their relationships, using data from 3,706 Dutch students reporting on their relationships with 218 teachers. Multi-group confirmatory factor analyses revealed partial measurement invariance, indicating item-level differences in how relational items were interpreted across ethnic majority and minority students. Latent mean comparisons showed that ethnic minority students reported lower Closeness, higher Conflict, and higher Negative Expectations than ethnic majority students. Findings highlight the importance of teacher trust, fairness, and sensitivity, and suggest that professional development could focus on relational attunement and perspective-taking to foster equitable, supportive student-teacher relationships and reduce relational and academic gaps.

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Collaborative Space

Teaching and Teacher Education

XR Learning: The Potentials of Volumetric Videos in Teacher Education

Keywords: Mixed methods, Teacher education, Teaching innovation or innovative teaching practices, Technology

Interest group: SIG 11 - Teaching and Teacher Education

Volumetric videos represent an innovative immersive technology that enables realistic, three-dimensional representations of teaching situations and may offer new potential for reflective practice in teacher education. This research project examines whether volumetric video-based reflection, viewed via VR-headsets, enhances the quality of reflection compared to conventional video-based reflection via laptop. For the teaching situation the reflections are applied to, we chose instructional explanations as these are part of teachers' core practices. Within an inter-university seminar, n=67 master's students in business education participated in a micro-teaching activity and were recorded either volumetrically or with a standard video camera. In addition, they conducted two peer reflections using the respective technologies. The study aims to provide empirical insights into the added value and limitations of volumetric video reflection for developing professional teaching competences. The findings will inform future integration of immersive technologies and contribute to the discussion on enhancing reflective practice through digital tools.

XR Learning: The Potentials of Volumetric Videos in Teacher Education

Presenting Author:Patricia Bucher, Universität Konstanz, Germany; **Co-Author:**Stefanie Findeisen, University of Konstanz, Germany

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Porthania P668

Collaborative Space

Enhancing pre-service teachers' resilience through structured reflection

Keywords: Higher education, Pre-service teacher education, Reflection, Teacher education

Interest group:

Pre-service teachers face different challenges in their pathways to becoming a teacher. Resilience has been shown to mitigate these challenges. This collaborative space therefore focuses on strengthening resilience within teacher education programmes through reflective practice. Building on previous research, we explore how reflective practice can serve as a powerful mechanism for enhancing resilience. During the session, participants –teacher educators, researchers and practitioners - will collaboratively design strategies, tools, and reflective activities that can be embedded in their programmes. Through shared inquiry and co-creation, the session bridges theory and practice, resulting in a set of design principles and activities that support resilience through reflective practice.

Enhancing pre-service teachers' resilience through structured reflection

Presenting Author:Marjon Fokkens-Bruinsma, University of Groningen, Netherlands; **Co-Author:**Irene Poort, University of Groningen, Netherlands

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Porthania P723

Collaborative Space

Higher Education

University students' study satisfaction: Assessment and Predictors in a Multi-country Project

Keywords: Assessment methods and tools, Higher education, Interdisciplinary, Mixed methods

Interest group: SIG 04 - Higher Education

"I am satisfied with my studies." This statement, representing students' study satisfaction, is an important outcome in higher education. However, limitations of current research hinder a comprehensive understanding of study satisfaction - including incomparable measurement instruments, only nationally published results, and a broad but fragmented analysis of predictors. This collaborative space aims to jointly develop approaches for a more systematic understanding of

study satisfaction. As a starting point, we propose to investigate study satisfaction, its meaning to students, and personal as well as contextual predictors in a multi-country project. In small groups, we will discuss this project, taking into account attendees' disciplines and higher education systems. We will focus on three themes: a) mixed-method approaches to assess study satisfaction, b) personal characteristics as predictors of study satisfaction, and c) contextual characteristics as predictors of study satisfaction. This exchange enables to identify opportunities for collaboration on understanding study satisfaction across countries.

University students' study satisfaction: Assessment and Predictors in a Multi-country Project

Presenting Author:Lena Kegel, University of Münster, Germany; **Co-Author:**Carla Bohndick, University of Hamburg, Germany; **Co-Author:**Jonas Breetzke, University of Hamburg, Germany; **Co-Author:**Stefan Janke, University of Mannheim, Germany

"I am satisfied with my studies." This statement, representing students' study satisfaction, is an important outcome in higher education. However, limitations of current research hinder a comprehensive understanding of study satisfaction - including incomparable measurement instruments, only nationally published results, and a broad but fragmented analysis of predictors. This collaborative space aims to jointly develop approaches for a more systematic understanding of study satisfaction. As a starting point, we propose to investigate study satisfaction, its meaning to students, and personal as well as contextual predictors in a multi-country project. In small groups, we will discuss this project, taking into account attendees' disciplines and higher education systems. We will focus on three themes: a) mixed-method approaches to assess study satisfaction, b) personal characteristics as predictors of study satisfaction, and c) contextual characteristics as predictors of study satisfaction. This exchange enables to identify opportunities for collaboration on understanding study satisfaction across countries.

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Porthania P723

Guided Poster Presentation

Higher Education, Motivational, Social and Affective Processes, Teaching and Teacher Education

Guided Poster Presentation paper_type_133 session 5

Keywords: Attitudes and beliefs, Cognitive development, Cognitive skills, Competence development, Content analysis, Early childhood education, Educational development, Motivation and emotion, Primary education, Qualitative methods, Quantitative methods, Reasoning, Self-efficacy, Self-regulation, Social development, Social sciences, Teacher, Teacher effectiveness, Teaching approaches, Values education

Interest group: SIG 04 - Higher Education, SIG 11 - Teaching and Teacher Education

Chairperson: Roosa Yli-Pietilä, Tampere University, Finland

Exploration of the relationship between subjective stance on gender and gender education.

Keywords: Primary education, Quantitative methods, Social sciences, Values education

Presenting Author:Juliette MUNERET, Université Marie et Louis Pasteur, France; **Co-Author:**Romuald JEAN-DIT-PANNEL, Université Marie et Louis Pasteur, France; **Co-Author:**Benjamin LE HÉNAFF, Université Marie et Louis Pasteur, France

In their attitudes and responses (Bréau & Lentillon-Kaestner, 2016; Duru-Bellat, 2016; Dutrévis & Toczek, 2007; Mieyaa et al., 2012), in their interactions (Duru-Bellat, 2016), or in the use of stereotyped pedagogical books (Block et al., 2022; Daréoux, 2007; Dionne, 2009; Tsao, 2008), primary school teachers differentiate students according to gender, based on the social meanings and characteristics that impregnate these contexts (e.g., "self-fulfilling prophecies"; Chavignon & Baudouin, 2019). This differentiation affects students' performance, motivation, self-esteem, and gender identity development. Consequently, teachers play a role in gender equity education, which is integrated into the French national curriculum. However, some resistance has been observed (Burens et al., 2010; Pachoud, 2018; Pasquier, 2010). It can therefore be hypothesized that personal confrontation with gender-related issues (e.g., gender stereotypes) is associated with teachers' investment in gender equity education (Pachoud, 2018; Pasquier, 2010). Through a first quantitative and exploratory study, we aim to test this hypothesis.

Longitudinal Effects of Experiential Education on Generic Outcomes among Undergraduate Students

Keywords: Cognitive development, Competence development, Educational development, Social development

Presenting Author:Bastian de Jong, University of Amsterdam, Netherlands; **Co-Author:**Rosa Möhrlein, University of Amsterdam, Netherlands; **Co-Author:**Chevy van Dorresteijn, University of Amsterdam, Netherlands

Abstract Universities aim to support students in developing generic (i.e., social, personal and cognitive) competencies for their future professional role in society. In doing so, experiential education is often preferred to lecture-centered education because it promotes the development of a wider skill range than just cognitive competencies. In this study, we explore longitudinal effects of experiential education on gains in generic skills and compared this to a lecture-centered curriculum. We administered questionnaires regarding the perception of experiential education and social, personal and cognitive outcomes among students in an experiential curriculum ($N = 70$) and among students in a lecture-centered curriculum ($N = 121$). Outcomes showed that the experiential education curriculum cohort scored higher on social (e.g., cooperation skills) and cognitive (e.g., speaking skills) outcomes, whereas students in the lecture-centered curriculum scored higher on personal outcomes (e.g., feelings of autonomy). Longitudinal data will unveil the sustainability of these results.

Leadership and Autonomy-Supportive Teaching: The Role of Teacher Resources

Keywords: Early childhood education, Quantitative methods, Self-efficacy, Teaching approaches

Presenting Author:Beatriz Marçalo, ISCTE-Instituto Universitário de Lisboa, Portugal; **Co-Author:**Helena Carvalho, ISCTE-Instituto Universitário de Lisboa, Portugal; **Co-Author:**Patrícia Costa, ISCTE-Instituto Universitário de Lisboa, Portugal; **Co-Author:**Cecília Aguiar, ISCTE-Instituto Universitário de Lisboa, Portugal

Early Childhood Education (ECE) teachers play an essential role in delivering high-quality education, yet they often struggle with diverse job demands. Grounded on the Job Demands-Resources Model, this study aimed to examine the indirect association between coordinators' transformational leadership and children's autonomy support through ECE teachers' self-efficacy and work engagement. Data were collected from 381 ECE teachers (373 women), aged between 23 and 65 years. Participants responded online to a sociodemographic questionnaire and self-report measures. Despite the small effect sizes, the results revealed that teachers' self-efficacy and work engagement were independently involved in the indirect associations between ECE coordinators'

transformational leadership and children's autonomy support by ECE teachers, whereas their combined sequential contribution was less evident. These findings help understand the needs of ECE teachers and identify organizational features (e.g., leadership) that can be improved to support ECE teachers' self-efficacy and work engagement, ultimately fostering higher-quality education.

Conceptual Reframing of Bloom's Affective Taxonomy : A Psychological Perspective

Keywords: Attitudes and beliefs, Motivation and emotion, Self-efficacy, Self-regulation

Presenting Author: Ai Poh Loh, National University of Singapore, Singapore

Bloom's affective taxonomy has shaped understandings of emotional (affective) learning for decades, yet its hierarchical structure does not align well with contemporary psychological theory. This paper proposes a reframing by mapping the taxonomy's five levels—receiving, responding, valuing, organization, characterization—onto five psychological constructs: awareness, relatedness, self-efficacy, self-regulation, and autonomy. This alignment addresses key limitations of the original model, including its hierarchical linear progression, lack of cultural sensitivity, and disconnection from modern research on motivation, identity, and emotional development. The proposed framework positions affective learning as a dynamic, interconnected set of values in which the five constructs mutually reinforce one another and vary across cultural, developmental, and disciplinary contexts. By integrating insights from emotional intelligence, attachment theory, social cognitive theory and self-determination theory, the model offers clearer conceptual foundations for studying affective learning. It provides a contemporary basis for developing new measurements, conducting longitudinal research, and refining pedagogical approaches.

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Porthania P722

Guided Poster Presentation

Higher Education, Teaching and Teacher Education

Guided Poster Presentation paper_type_133 session 1

Keywords: Educational policy, Higher education, Noticing, Practitioner research, Professional development interventions, Professional vision, Reasoning, Reflection, Research-based teaching, Social interaction, Teacher professional development, Teaching innovation or innovative teaching practices, Video analysis

Interest group: SIG 04 - Higher Education, SIG 11 - Teaching and Teacher Education

Chairperson: Florian Sievert, University of Potsdam, Germany

Seeing the Expected vs. the Unexpected: Expertise Differences in Teachers' Noticing and Reasoning

Keywords: Noticing, Professional vision, Reasoning, Teacher professional development

Presenting Author: Jasmin Heinrichs, Technical University Munich, School of Social Sciences & Technology, Friedl Schöller-Stiftungslehrstuhl für Pädagogische Psychologie, Germany; **Co-Author:** Ricardo Bôheim, Technical University of Munich, Germany; **Co-Author:** Christian Kosel, Technical University of Munich, TUM School of Social Sciences and Technology, Germany; **Co-Author:** Tina Seidel, Technische Universität München, Germany

Monitoring student's behavior and interactions is critical for effective and adaptive teaching. This study investigates how professional vision (PV) differs between experienced and pre-service teachers when observing classroom interactions. Building on four processes related to PV—information processing and breadth of visual field (noticing), organizing and integrating (reasoning)—we examine how expertise shapes visual attention and reasoning in situations that either align with or contradict existing professional schemata. Participants view scripted video clips of biology lessons depicting both aligned and non-aligned classroom situations. Eye-tracking data, retrospective think-alouds, and visual recall tasks are used to assess noticing and reasoning quality. We assume that experts identify relevant information more efficiently and engage in deeper, more integrative reasoning processes than novices. The study aims to systematically investigate the visual and cognitive processes underlying PV and contribute to understanding how expertise shapes PV across both routine and challenging classroom contexts.

Exploring (student)teacher interactions on data: Developing an SNA observation tool

Keywords: Research-based teaching, Social interaction, Teacher professional development, Video analysis

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

(Student)teachers are increasingly expected to make data-informed decisions, yet research shows that their data literacy often remains limited. Social interactions and team discussions among teachers and teacher teams are considered to be essential for optimizing data literacy learning. However, capturing social network (SNA) data in team discussions remains a challenge. Most studies that focus on team learning through social interactions rely on self-report SNA data, which are vulnerable to recall errors, bias, and inconsistencies that can distort network structure and metrics. Our study aims to move beyond self-reported measures through developing a measurement tool for video-based social network analysis (SNA) that will serve as a foundation for exploring how teacher interactions contribute to data literacy learning. The developed protocol will provide a methodological foundation for analysing teacher interactions and deepen our understanding of how collaborative processes support data literacy learning.

Defining and embedding the Scholarship of Teaching and Learning (SoTL) in institutional policy

Keywords: Educational policy, Higher education, Research-based teaching, Teacher professional development

Presenting Author: Svenne Groeneweg, University of Amsterdam, Netherlands; **Co-Author:** Natalie Pareja Roblin, University of Amsterdam, Netherlands; **Co-Author:** Daphne van Weijen, University of Amsterdam, Netherlands; **Co-Author:** Monique Volman, University of Amsterdam, Netherlands

The Scholarship of Teaching and Learning (SoTL) encourages university teachers to systematically investigate and improve their own teaching practice. It is understood variously as a means to enhance student learning and teaching quality, a form of reflective practice supporting academic professional development, and a driver of institutional innovation. This conceptual diversity raises the question of how SoTL is understood and implemented across various institutions. Therefore, the present study explores how SoTL is defined, positioned, and promoted to gain insight into how universities interpret and embed the concept in their institutional policies and teaching cultures. Through document analysis and interviews with policymakers from six Dutch universities, the study examines how SoTL is represented in policy language, which values, aims, and goals are emphasized, and how it is supported. The findings provide support for more coherent and reflective approaches to SoTL policy and development within higher education.

The Repertory Grid Technique as a Tool for Reflecting Teachers' Subjective Theories

Keywords: Professional development interventions, Reflection, Teacher professional development, Teaching innovation or innovative teaching practices

Presenting Author: Selina Silian, University of Innsbruck, Austria

This poster presents the Repertory Grid Technique (RGT) as a professionalisation tool for reflecting teachers' subjective theories. Using a case study of the Accredited European School Tyrol (AES-Tyrol) as an example, the RGT is used to analyse teachers' subjective theories (n=18) regarding the realisation of the European Dimension in their lessons. As the AES-Tyrol is part of the system of the European Schools since 2023, they have to follow the syllabi and regulations of this system, with the European dimension as an essential pedagogical principle and fundamental element in the syllabi. As this constitutes a differentiation from the Austrian syllabi, it is essential that teachers develop a clear awareness of how the European dimension is enacted in their teaching practice. Using the RGT, teachers' implicit knowledge can be made visible in the form of mental maps, which can serve as a valuable tool for reflecting their own teaching.

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Porthania P668

Guided Poster Presentation

Higher Education

Guided Poster Presentation paper_type_133 session 6

Keywords: Assessment methods and tools, At-risk students, Collaborative learning, Computer-assisted learning, Critical thinking, Diversity, Doctoral education, E-learning, Higher education, Knowledge creation, Learning approaches, Learning disabilities, Motivation, Online learning, Qualitative methods, Workplace learning

Interest group: SIG 04 - Higher Education

Chairperson: Päivi Virtanen, University of Helsinki, Finland

Early career researchers' identity constructions in crisis

Keywords: Diversity, Doctoral education, Higher education, Qualitative methods

Presenting Author: Hannah Sloane, Paderborn University, Germany

This study explores the often-overlooked transition into PhD studies in Germany. Drawing on identity theory and biographical approaches, it investigates how individuals experience this shift, finding that identity crises are triggered by uncertainty and mismatch between self-narratives and new academic realities. Using narrative interviews with eight participants across disciplines, analysed via biographical reconstruction and positioning analysis, the research reveals that the transition is a critical moment of identity construction. Crucially, disciplinary cultures—unspoken norms, practices, and ways of thinking—play a central role in shaping this process. Differences in background, resources, and available subject positionings exacerbate these challenges, especially when new roles don't align with narratives of the self. The study contributes theoretically by expanding existing models of transition with the concept of disciplinary culture and practically by advocating for more inclusive academic practices that acknowledge and address identity-related struggles, thereby fostering equity in higher education.

Barriers to and facilitators of studying with ADHD – a literature review on student experiences

Keywords: At-risk students, Diversity, Higher education, Learning disabilities

Presenting Author: Katri Kleemola, University of Helsinki, Finland

This systematic literature review examines the experiences of students with ADHD in higher education, identifying key barriers and facilitators. Barriers include executive dysfunction (e.g., attention and time management issues), systemic challenges (inflexible teaching, ineffective accommodations), and stigma leading to non-disclosure and alienation. Facilitators involve supportive relationships, coping strategies like medication and flexible learning, and occasional recognition of ADHD-related strengths. Despite legal mandates, accommodations often fail to meet students' needs, and institutional ableism exacerbates difficulties. The review calls for inclusive pedagogies, staff education on ADHD, and systemic change to foster belonging and success. Research should move beyond deficit-based models to include strength-based perspectives and lived experiences.

Why Do Students Use Feedback or Not? Exploring the Role of Motivation in Online Self-Assessments

Keywords: Assessment methods and tools, Computer-assisted learning, Higher education, Motivation

Presenting Author: Bo Matton, University of Antwerp, Belgium; **Co-Author:** David Gijbels, University of Antwerp, Belgium; **Co-Author:** Vincent Donche, University of Antwerp, Belgium

In higher education, survey-based feedback generated through online self-assessments are increasingly used to provide personalized feedback to large student cohorts. However, students often struggle to use this feedback appropriately. Recently, the field of feedback research spent more attention on both, the internal feedback process, of students and the role of individual differences. Still, the role of motivation in students' feedback engagement and agency, and the potential of feedback-agency support aligned with their basic psychological needs for autonomy, relatedness, and competence, remain unclear. The results of a pilot lab study (n = 33) based on feedback from a self-assessment questionnaire, eye-tracking data and interviews show meaningful relationships between motivation and students' feedback processing and engagement. As the pilot study only scratched the surface, this poster additionally provides an overview of the planned research on the internal feedback process, the role of motivation, and feedback-agency support aligned with students' basic psychological needs.

Online Learning in Wartime Ukraine

Keywords: E-learning, Higher education, Learning approaches, Online learning

Presenting Author: Tetyana Vereshchahina, University of Fribourg, Switzerland and NAUKMA University, Ukraine, Switzerland; **Co-Author:** Alla Bodnar, National University of Kyiv-Mohyla Academy, Ukraine

This study investigates students' self-efficacy beliefs regarding online education, emotional well-being, and the challenges they face. Due to a mixed-method design, data were collected through a structured questionnaire, which evaluated self-efficacy beliefs in areas such as learning process technology use and time management and open-ended questions about positive, negative aspects and proposed improvements. Results indicate that students feel less confident in managing their time compared to technology use and learning process. That may be explained by war-related issues: uncertainty, instability, electricity cuts, alerts. While many students noted positive aspects of online learning such as convenience and flexibility; negative feelings like boredom and isolation were prevalent. Challenges included war in general, feeling of isolation, lack of understanding and high workload. Improvements proposed by students include enhanced communication, clearer guidelines, and emotional support for students. It can also be important for the teacher to improve technological skills.

Developing Students' Critical Online Reasoning in Higher Education: Longitudinal Insights and AI Use

Keywords: Assessment methods and tools, Critical thinking, Higher education, Online learning

Presenting Author: Lisa Martin de los Santos, Johannes Gutenberg-University Mainz, Germany; **Co-Author:** Olga Zlatkin-Troitschanskaia, Johannes Gutenberg University Mainz, Germany; **Co-Author:** Dimitri Molerov, Humboldt-University Berlin, Germany; **Co-Author:** Miriam Toepper, Johannes Gutenberg University Mainz, Germany; **Co-Author:** Lukas Trierweiler, Johannes Gutenberg University of Mainz, Germany; **Co-Author:** Kevin Shenavai, Johannes Gutenberg-Universität Mainz business education, Germany

University students increasingly rely on online resources for learning, making Critical Online Reasoning (COR)—the ability to evaluate, select, and use digital information—essential. Yet, longitudinal evidence on COR-development in AI-supported contexts remains limited. This study, conducted within an interdisciplinary international research unit comprising nine projects, examines students' COR development and AI-adoption across three waves during their first study years at eight universities and four disciplines. Using authentic, performance-based open-web tasks, we captured students' real-time search, evaluation, and reasoning behaviors. Preliminary results reveal persistent challenges in source evaluation, particularly in AI-mediated environments. Strategic AI-use was associated with higher-quality reasoning and synthesis, whereas overreliance led to narrow source selection and weaker argumentation. Domain differences emerged: medical students cited more peer-reviewed sources, while economics students relied more on media. Findings highlight both opportunities and risks of AI in COR and underscore the need for instructional support to foster competent online information practices.

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Language Center 204

Guided Poster Presentation

Motivational, Social and Affective Processes, Teaching and Teacher Education

Guided Poster Presentation paper_type_133 session 4

Keywords: Action research, Artificial intelligence, Beginning teachers, Collaborative learning, Competence development, Learning disabilities, Motivation and emotion, Noticing, Pre-service teacher education, Reasoning, Self-efficacy, Survey research, Teacher educator, Teacher educator professional development, Teacher professional development, Teaching innovation or innovative teaching practices, Video analysis

Interest group: SIG 11 - Teaching and Teacher Education, SIG 14 - Learning and Professional Development

Chairperson: Ellinor Allen, Monash University, Australia

From GenZ to GenAI: How Do Student Teachers and Their Teacher Educators Perceive and Use GenAI?

Keywords: Artificial intelligence, Pre-service teacher education, Survey research, Teacher educator

Presenting Author: Jonas Dierickx, Ghent University, Belgium; **Co-Author:** Ruben Vanderlinde, Ghent University, Belgium; **Co-Author:** Tammy Schellens, Ghent University, Belgium; **Co-Author:** Delphine Sasanguie, HOGENT, Belgium

The rapid emergence of generative artificial intelligence (GenAI) tools, such as ChatGPT, has transformed the educational landscape, creating new opportunities and challenges for teacher education. This doctoral research study explores how student teachers and their teacher educators in Flanders perceive, are skilled in, and use GenAI in their profession. Drawing on the extended Technology Acceptance Model (TAM) (Kong et al., 2024) and the AI-TPACK framework (Celik, 2023), the current study examines student teachers' and their educators' perceptions and skills related to GenAI. A large-scale survey is conducted across Flemish teacher education programmes, with instruments adapted to both groups. The research addresses a critical gap in understanding the limited investigated research context of how future teachers and current teacher educators perceive and engage with GenAI in their teaching and learning contexts (Panday-Shukla, 2025).

From Accurate Interpretation to Effective Intervention: Managing Challenging Classroom Behavior

Keywords: Competence development, Pre-service teacher education, Reasoning, Teacher professional development

Presenting Author: Anja Böhnke, Freie Universität Berlin, Germany; **Co-Author:** Sarah Burkhardt, Freie Universität Berlin, Germany; **Co-Author:** Felicitas Thiel, Freie Universität Berlin, Germany

Novice teachers often struggle to prevent and manage classroom disruptions, partly because they lack the diagnostic competencies needed to accurately analyze critical situations and respond adequately to challenging student behavior. To foster situation-sensitive application of professional knowledge, we developed a digital learning module that integrates theoretical input on classroom management with case-based learning. Two scaffolding elements support diagnostic competence development: expert comments modeling in-depth lesson analysis and a functional behavior assessment tool guiding the identification of motives and behavioral functions. Study 1 ($N = 100$) showed that expert comments significantly improved professional knowledge and diagnostic competencies compared to a control group. Study 2 ($N = 308$) demonstrated that using the functional behavioral assessment tool enhanced the identification of behavior-relevant characteristics when analyzing video cases. Analyses examining the impact on function-based intervention planning are currently underway. The contribution discusses implications for supporting diagnostic competencies in teacher education regarding challenging classroom behavior.

Pedagogical Mentors as Agents of Change in Integrating PBL, PBE, UDL and DI in Pre-service Training

Keywords: Collaborative learning, Pre-service teacher education, Teacher educator professional development, Teaching innovation or innovative teaching practices

Presenting Author: Ronit Nitzan-Sella, Oranim Academic College and Teaching, Israel; **Co-Author:** Hilla Sechter Solomon, Oranim Academic College and Teaching, Israel; **Co-Author:** Aula Khatteb-Abuliel, Oranim Academic College and Teaching, Israel

This study explores the experiences of pedagogical mentors who collaboratively initiated a pedagogical innovation in a special education teacher training program. The mentors co-developed and implemented an integrative approach that simultaneously applied four complementary frameworks: Project-Based Learning (PBL), Place-Based Education (PBE), Universal Design for Learning (UDL), and Differentiated Instruction (DI). Their integration created a coherent model linking inquiry, context, accessibility, and individualization, fostering inclusive and adaptive teaching in outdoor and cross-disciplinary environments. Using qualitative interpretive design, data were collected from interviews, professional dialogues, and written reflections. Findings reveal mentoring as a dynamic, reflective, and emotionally demanding process centered on three dimensions: collaborative agency, reflective mediation, and adaptive professionalism. The study highlights how the integration of these frameworks expanded mentors' pedagogical understanding and positioned them as key agents of change. It calls for institutional recognition of mentoring as professional learning that supports innovation and inclusion in teacher education.

Learning in the Kitchen: Embodied and Emotional Learning in Special-Education Teacher Preparation

Keywords: Action research, Learning disabilities, Motivation and emotion, Pre-service teacher education

Presenting Author: Ronit Nitzan-Sella, Oranim Academic College and Teaching, Israel; **Co-Author:** Hilla Sechter Solomon, Oranim Academic College and Teaching, Israel

This qualitative action research, led by the pedagogical mentor, examines the professional and emotional development of a third-year pre-service special-education teacher with learning disabilities. The study investigates how *The Embodied Teaching Lab*, a year-long experiential intervention, shaped the student's self-efficacy, motivation, and emerging teacher identity. Integrating Differentiated Instruction (DI), Social-Emotional Learning (SEL), strengths-based education, and embodied, cooking-based pedagogy, the kitchen served as a hybrid space connecting emotion, reflection, and cognition. Findings reveal that emotional engagement transformed abstract theory into embodied understanding, turning vulnerability into pedagogical strength and fostering agency, creativity, and reflection. The study advances an embodied view of teacher education, demonstrating that adaptive, inclusive teacher development is cultivated not only through reflection but through embodied doing and emotional engagement.

External and internal perspectives: How video-based reflection models shape relational noticing

Keywords: Artificial intelligence, Noticing, Pre-service teacher education, Video analysis

Presenting Author: Christopher Neil Prilop, Aarhus University, Denmark; **Co-Author:** Rikke M. Gregersen, Aarhus University, Denmark; **Co-Author:** Birgitte Lund Nielsen, VIA University College, Denmark

Video-based reflection models support pre-service teachers' noticing skills, yet typically emphasise only a teacher's perspective, e.g., from collaborative video clubs. To strengthen relational noticing skills, this study explores how including pupil perspectives through GenAI-mediated feedback affects pre-service teachers' developing noticing skills. In a quasi-experimental pre-post design, first-year pre-service teachers participate in one of three intervention groups: (1) collaborative reflection, (2) collaborative reflection enhanced by GenAI-generated pupil feedback based on pupils' Lived Experience Descriptions, (3) collaborative reflection + GenAI feedback + individual reflection with teacher educators. Skill development is assessed through video analysis tasks and surveys on self-efficacy and perspective-taking. Drawing on sociocultural and social constructivist theories of feedback and van Es and Sherin's (2021) framework of teacher noticing, the study examines how feedback and reflection models shape learning processes. Results will advance understanding of how video-based reflection and GenAI can enhance relational noticing skills in teacher education.

Integrating PBL, PBE, UDL, and DI: Bridging Reflection, Inclusion, and Practice in Teacher Education

Keywords: Differentiated instruction, Pre-service teacher education, Problem-based learning, Reflection

Presenting Author: Hilla Sechter Solomon, Oranim Academic College and Teaching, Israel; **Co-Author:** Ronit Nitzan-Sella, Oranim Academic College and Teaching, Israel; **Co-Author:** Aula Khatteb-Abuliel, Oranim Academic College and Teaching, Israel

The study examines the integration of four pedagogical frameworks: Project-Based Learning (PBL), Place-Based Education (PBE), Universal Design for Learning (UDL), and Differentiated Instruction (DI), within outdoor and cross-disciplinary environments in a special education teacher program. Conducted in a unique course at a teacher education college, the research examines how this novel combination of frameworks supports the development of reflective, adaptive, and inclusive teaching practices among pre-service teachers. Using a qualitative, interpretive design, data were collected from students' project artifacts, lesson plans, reflective reports, focus group interviews, and the researcher's field notes. The analysis traced processes of pedagogical change and the translation of theoretical principles into situated teaching strategies. Findings highlight a shift from theoretical awareness to embodied enactment, as students developed pedagogical awareness, reflective thinking, and collaborative professionalism. The study proposes an integrative framework for inclusive teacher preparation that bridges theory and practice through experiential engagement with diverse learning spaces.

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Guided Poster Presentation paper_type_133 session 3

Keywords: Assessment methods and tools, Attitudes and beliefs, Collaborative learning, Competence development, Competences, Evidence-based teaching, Language, Mixed methods, Motivation, Pre-service teacher education, Primary education, Professional development interventions, Qualitative methods, Reflection, Teacher, Teacher education, Technology, Transformative learning

Interest group: SIG 11 - Teaching and Teacher Education

Chairperson: Julia Klug, Austria

Navigating Emotional Uncertainty: Clinical Simulations as Pathways to Resilience

Keywords: Collaborative learning, Professional development interventions, Reflection, Teacher education

Presenting Author:Orna Levin, Achva Academic College, Israel; **Co-Author:**Merav Hemi, Shaanan Academic Religious Teachers' College, Israel; **Co-Author:**Ronen Kasperski, Gordon College of Education, Israel

This proposal integrates findings from two independent studies exploring emotional dynamics in clinical simulations. The first examines facilitators' multidimensional role in managing uncertainty and creating learning environments that are both safe and challenging. The second investigates participants' experiences, focusing on how psychological safety and uncertainty interact to foster social-emotional learning (SEL) competencies, particularly resilience. Findings indicate that a sense of safety, nurtured by facilitators, is essential for entering the learning zone, while uncertainty provides fertile ground for emotional and cognitive growth. Both studies highlight collaborative reflection as a driver of innovative thinking and adaptive learning. The discussion connects facilitators' and participants' experiences to the resilience framework of Patterson and Kelleher (2005), proposing an integrative model for cultivating reflective practice and resilience through uncertainty in experiential learning.

Measuring teachers' data literacy skills: The development and validation of a data literacy test

Keywords: Assessment methods and tools, Competences, Evidence-based teaching, Teacher education

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

Measuring teachers' data literacy skills remains a challenge. Existing tools often focus on a specific subset of data literacy or rely on self-reports. In this poster presentation, we discuss the development and validation of a vignette-based data literacy test designed to assess (student) teachers' data literacy within authentic classroom contexts. The instrument incorporates realistic and context-specific vignettes co-constructed with experts and practitioners to ensure both scientific rigor and practical relevance. The test is validated through a mixed-method approach involving 60 pre-service and 60 in-service teachers, employing comparative judgement to assess responses. The findings indicate that the vignette-based instrument offers a reliable and authentic means of capturing the diverse data literacy skills necessary for data-based decision-making.

Motivation to become a teacher, satisfaction with choice and certainty of future career in teaching

Keywords: Mixed methods, Motivation, Qualitative methods, Teacher education

Presenting Author:Lise Evalyn Hovn Larsen, UCL University College, Odense, Denmark; **Co-Author:**Louise Ziaya Christensen, UCL University College, Odense, Denmark; **Co-Author:**Anders Houe Wisniewski, UCL University College, Odense, Denmark; **Co-Author:**Tine Nielsen, UCL University College, Odense, Denmark

Research within career choice motivation theory consistently shows that students with intrinsic and social teacher motivations are generally more committed and satisfied with their career choice. The purpose is to investigate to which degree intrinsic, extrinsic, and altruistic motivations to become a teacher when starting teacher education can predict satisfaction with the choice of teacher education and certainty in pursuing a teaching career one year later in the Danish teacher education context? We employ the tripartite taxonomy of intrinsic, extrinsic, and altruistic motivations, to further classify the categories of teacher motivations found in the Danish data of an ongoing comparative study with Finnish student teachers. We now present preliminary cross-sectional results from first-year (N=123) and second-year (N=100) student teachers to establish the baseline (initial motivations) and define our expectations for findings in the longitudinal prediction study, which will be finalized, when the first-year students have become second-year students.

Knowledge circulation through in-service training: conflicts and complementarities

Keywords: Language, Primary education, Teacher education, Transformative learning

Presenting Author:Sonya Florey, Haute école pédagogique du canton de Vaud (HEP Vaud), Switzerland; **Presenting Author:**Roxane Gagnon, Haute école pédagogique du canton de Vaud (HEP Vaud), Switzerland

Our design-based research focuses on helping primary and secondary teachers embracing new mandatory French textbooks in the French-speaking Switzerland. The introduction of the new textbooks is provoking a number of shifts in teaching practices, generating tensions among teachers in the canton of Vaud. Our design-based research includes an in-service training program in which teachers become trainers for their own colleagues. Aiming to promote collaboration and ultimately the transformation of teaching practices, our project emphasizes on bridging research and practice gaps, identifying *boundary objects* that combine common sphere of interest and action. The data from the 592 teachers who responded to the survey were analyzed to evaluate how teachers' reference frameworks shape the program's design and impact. The study seeks to create a robust, effective in-service education program that fosters collaboration, adapts to teacher needs, and promotes the circulation and transformation of pedagogical knowledge.

Predictors of Multiprofessional Collaboration at German All-day Schools

Keywords: Attitudes and beliefs, Primary education, Teacher, Teacher education

Presenting Author:Dorothea Vogel, Otto-Friedrich-University Bamberg, Germany; **Co-Author:**Jennifer Paetsch, University of Bamberg, Germany; **Co-Author:**Lena Biele, TU Dortmund University, Germany; **Co-Author:**Birgit Heppt, TU Dortmund University, Germany; **Co-Author:**Ilonca Hardy, Goethe-Universität Frankfurt, Germany; **Co-Author:**Sofie Henschel, Humboldt Universität zu Berlin, Germany

As German all-day schools increasingly rely on multiprofessional teams, effective collaboration among educational staff is considered an important condition for fostering students' learning. The present study examines structural and individual predictors of multiprofessional collaboration between teachers and educational staff in German all-day schools. A total of 85 teachers, 31 education professionals, and 26 school principals from 30 elementary schools participated in the survey. Preliminary findings show that educational staff rated the utility of multiprofessional collaboration for students significantly higher than teachers did. No significant group differences were found regarding perceived costs or the perceived quality of collaboration. Regression analyses demonstrated that perceived utility was a significant predictor of collaboration across all three levels of collaboration quality—exchange, division of labour, and co-construction. In contrast, perceived costs exhibited no significant effects on perceived collaboration quality. Insights into the role of structural components will be available by the time of the conference.

Heterogeneity and Development in Pre-Service Teachers' Digital Competence Beliefs

Keywords: Competence development, Pre-service teacher education, Teacher education, Technology

Presenting Author:Charlott Rubach, University Rostock, Germany

For teacher education, we assume that pre-service teachers are a heterogeneous group when it comes to their digital competences. This assumption is supported for professional digital competence—it however lacks evidence for basic digital competence. This longitudinal study aimed to investigate basic digital competences and focus on the co-existence of distinct patterns across six competence dimensions and how these patterns change from the beginning to the end of one semester. Data were drawn from a pre-registered project at a public German university. For these analyses, we used a sample of 345 pre-service teachers (69% identified as female). We compared different latent profile solutions and identified in the first step four distinct profiles that best represented the heterogeneity in competence beliefs.

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Guided Poster Presentation paper_type_133 session 2

Keywords: Differentiated instruction, Higher education, Knowledge creation, Lifelong learning, Pre-service teacher education, Primary education, Problem-based learning, Professional vision, Psychometrics, Qualitative methods, Quantitative methods, Reflection, Synergies between learning; teaching and research, Video analysis, Vocational education

Interest group: SIG 04 - Higher Education, SIG 11 - Teaching and Teacher Education

Chairperson: Maria Carme Peguera-Carré, Spain

Analogies Matter: Innovative Approaches to Understanding Student Experience

Keywords: Knowledge creation, Qualitative methods, Reflection, Synergies between learning; teaching and research

Presenting Author: Laura Felby, Aarhus University, Denmark

This poster presentation examines how metaphors and analogies can offer creative insights into students' experiences of disciplinary learning in higher education. As part of a long-term research project on first-year students' engagement with academic content, we conducted interviews over three semesters with students from ten programmes across five faculties. In the final interview round, students were asked to describe their study programme using a metaphor, analogy, or object. These representations provide a unique perspective for reflecting on how students conceptualise their academic journey and negotiate meaning within disciplinary contexts. Drawing on theoretical ideas on analogical reasoning, we present initial analyses of this data and discuss how analogies might bridge cognitive and emotional aspects of learning. The poster encourages discussion on whether metaphor-based approaches can function as innovative reflective practices in higher education research.

Exploring Dialogic Scaffolding in Video-Based Reflection in Teacher Education

Keywords: Pre-service teacher education, Professional vision, Reflection, Video analysis

Presenting Author: Kadi Georg, Tallinn University, Estonia; **Co-Author:** Katrin Poom-Valickis, Tallinn University, Estonia

Video-based reflection is recognized as an effective pedagogical approach for developing teachers' situation-specific skills, such as perception, interpretation, and decision-making. However, evidence remains limited on how structured scaffolding and facilitation influence these interconnected processes. This qualitative comparative study investigates how different facilitation structures and classroom video types shape pre-service teachers' reflective reasoning during collaborative video-based discussion. Four focus group discussions (N = 12) were conducted in which participants analyzed both functional and dysfunctional lesson videos using targeted prompts and written reflections. Data sources included discussion recordings, pre- and post-discussion responses, and observational field notes. Thematic and comparative analyses examine interaction patterns and the quality and depth of student teachers' reflections, reasoning and pedagogical decision-making. This study explores how facilitation design influences the dynamics of small-group video-based discussions in teacher education, focusing on how structured prompts and video type guide pre-service teachers' reflective reasoning and decision-making processes.

Preparing Future Teachers for Sustainability: Teacher Educators' Role and Readiness

Keywords: Sustainability, Teacher educator, Teacher educator professional development, Teaching/instruction

Presenting Author: Kimberly Siacor, University of Vienna, Austria; **Co-Author:** Dominik Froehlich, University of Vienna, Austria

This study explores teacher educators' action competence in Education for Sustainable Development (ESD) by examining five factors: content and pedagogical content knowledge in ESD, value of ESD, ascription of responsibility, self-efficacy, and intention to implement ESD. Using semi-structured interviews, the research will investigate how these dimensions shape educators' readiness and capacity to integrate ESD into teacher education. Data will be analyzed through thematic analysis to identify patterns, potential barriers and enablers. By highlighting the cognitive, affective, and motivational aspects of action competence, the study aims to inform professional development programs that strengthen teacher educators' ability to model and foster sustainability-oriented practices. Findings are expected to provide insights for enhancing the preparation of future teachers for ESD-oriented teaching.

The Influence of Event Characteristics on Self-Reflection Among University Students

Keywords: Higher education, Lifelong learning, Quantitative methods, Reflection

Presenting Author: Joedith López-Cuello, Maastricht University, Netherlands; **Co-Author:** Anke Sambeth, Maastricht University, Netherlands; **Co-Author:** Sijr Uitdewilligen, Maastricht University, Netherlands

Reflection is increasingly recognized as essential in higher education for promoting active learning, employability, and professional development. Therefore, recent approaches have focused on mapping the events that authentically trigger reflection; however, little is known about which characteristics of these events prompt student self-reflection over time. This study applies Event System Theory to investigate the influence of specific event characteristics—novelty, disruption, and criticality—on student reflection. In a five-week longitudinal study, 130 university students reported a significant weekly event and rated its characteristics, alongside their self-reflection. Linear mixed-effects analyses revealed that event disruption positively predicted self-reflection both within and between students, while novelty and criticality did not. These findings suggest that reflection among university students is primarily stimulated by events that disrupt established routines, rather than by novel or highly critical experiences. Implications include designing educational activities that intentionally challenge students' habitual practices to foster meaningful reflection.

The Reflective Lens: Pre-service Teachers' Attentiveness to Attuned Interaction Elements

Keywords: Primary education, Professional vision, Reflection, Video analysis

Presenting Author: Lucie Gruzova, Faculty of Education, Masaryk University, Brno, Czech Republic; **Presenting Author:** Anna Pospíchalová, Faculty of Education, Masaryk University, Brno, Czech Republic

This study investigates how pre-service primary teachers attend to elements of attuned interaction when reflecting on their own classroom communication through video-based self-reflection. Within an initial teacher education programme, Video Interaction Guidance (VIG) supports students in identifying and analysing interactions from their practice that they perceive as meaningful. Structured reflective essays serve as the data source and are analysed using thematic analysis. The focus is on which interactional features students notice and value, the ways they justify their evaluations, and how their understanding of communication develops over time. Early insights indicate individual differences: some students focus on the content and verbal flow of interaction, while others attend more to non-verbal and affective cues. These tendencies, shaped by prior experience and personal dispositions, do not conform to a single pattern. Nevertheless, recurring themes will inform subsequent focus groups, which will use semi-structured reflection to deepen and challenge students' emerging professional vision.

Vocational students' study choice process: SSCTI validation and invariance across gender and SES

Keywords: Higher education, Psychometrics, Quantitative methods, Vocational education

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

The study choice process plays a central role in adolescents' transition to higher education, yet little is known about how it is measured within the vocational track. The Shortened Study Choice Task Inventory (SSCTI) is widely used in Flanders to support study choice decisions, but it has not been validated for vocational track students transferring to higher education. This study investigates the construct validity of the SSCTI (RQ1) and tests measurement invariance across gender and socioeconomic status (RQ2) using data from 3737 vocational track students who completed the SSCTI in their final year of secondary education. We also examine convergent validity between decisional tasks, vocational identity, and study choice intentions (RQ3), and describe group differences across gender and SES (RQ4). Exploratory and confirmatory factor analyses, multigroup invariance testing, and correlational analyses will be used. These analyses aim to clarify whether the SSCTI adequately captures study choice processes within vocational education.

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Porthania P724

Guided Poster Presentation

Guided Poster Presentation paper_type_133 session 7

Keywords: Sustainability, Teacher educator, Teacher educator professional development, Teaching/instruction

Interest group:

Chairperson: Turkan ISTENCIOGLU, Deakin University, Australia

Cognitive Activation in Educational Practice: Empirical Insights into Teachers' Knowledge

Keywords: Cognitive skills, Competence development, Content analysis, Teacher effectiveness

Presenting Author: Jan-Friso Heeren, Bergische Universität Wuppertal, IFB, School of Education, Germany; **Co-Author:** Jasmin Decristan, University of Wuppertal; **IDEA-Research Center, Germany;** **Co-Author:** Benjamin Fauth, University of Tuebingen, Institute of Education, Germany
Cognitive activation (CA), a core dimension of teaching quality, emphasizes students' engagement in deep thinking through cognitively demanding tasks (Klieme et al., 2009). While previous CA research has mainly focused on outcomes, teachers' understanding and implementation of CA remain underexplored. This study examines teachers' conceptual and task-based knowledge of CA based on responses from 209 German teachers of different positions, school types and regions. Using open-ended survey tasks and qualitative content analysis with deductive and inductive coding, findings reveal that teachers' CA knowledge is generally low, with several research-relevant aspects rarely recognized. Conversely, teachers associate CA with e.g. student motivation, teaching methods, real-world relevance and interdisciplinarity - elements underrepresented in scientific conceptualizations. These results suggest a gap between educational research and teachers' professional understanding, indicating that CA is neither well established in practice nor aligned with teachers' view.

Teachers' Cognitive Processing of Graphical Data: Patterns in Prior Knowledge and Comprehension

Keywords: Cognitive skills, Qualitative methods, Reasoning, Teacher

Presenting Author: Liesje Vanhaecke, University of Antwerp/ Catholic University of Leuven, Belgium; **Co-Author:** Roos Van Gasse, Catholic University of Leuven, Belgium; **Co-Author:** Sven De Maeyer, Antwerp University, Belgium; **Co-Author:** Tine van Daal, University of Antwerp, Belgium; **Co-Author:** Dries De Weerd, University of Antwerp / Ghent University, Belgium
In data-based instructional decision-making, teachers are increasingly expected to analyze and interpret graphical performance data of pupils. In the cognitive processing of graphs, teachers demonstrate graph comprehension abilities by reading the data, reading between the data, and reading beyond the data, with each step guided by prior knowledge such as their pedagogical content knowledge. However, these underlying cognitive processes remain underexplored. Existing studies mainly examine how individuals comprehend statistical information, typically using think-aloud protocols. Yet, little is known about how teachers' prior knowledge and graph comprehension abilities interact in these processes. Moreover, refined methods are required to unravel them. In this study, eyetracking data serve as a basis for cued recalls to provide an in-depth understanding of teachers' cognitive processing of graphical performance data, with particular attention to patterns in graph comprehension abilities and prior knowledge domains. Analysis is ongoing and will be presented at the conference.

Designing Teacher Professionalisation for a Renewed Educational Vision

Keywords: Higher education, Practitioner research, Professional development interventions, Teacher professional development

Presenting Author: Niels Bohnen, HAS green academy, Netherlands; **Co-Author:** Suzan van Ierland, HAS green academy, Netherlands
Our university of applied sciences is redesigning its educational portfolio in line with a new educational vision and instructional design principles. This transition requires teachers to further develop feedback literacy, coaching competences, and skills to foster students' self-regulation. Building on earlier research into a didactic coaching programme, we used a survey and follow-up focus groups, to identify teachers' professional learning needs and priorities. The results will inform the design of a pilot programme and subsequently an institute-wide development programme aligned with principles of effective teacher learning. The outcomes will include guidelines and actionable steps for both a pilot programme and a university-wide professionalisation approach that supports staff in implementing the new educational vision.

An evaluation of teacher professional development for curriculum innovation

Keywords: Practitioner research, Professional development interventions, Teacher professional development, Teaching innovation or innovative teaching practices

Presenting Author: Niels Bohnen, HAS green academy, Netherlands; **Co-Author:** Suzan van Ierland, HAS green academy, Netherlands
This study evaluates a two-year professional development program designed to prepare teaching staff for a new curriculum centered on longitudinal and self-regulated learning. Building on earlier research, the program emphasized teacher feedback literacy and didactic coaching. Using surveys and interviews, we examined how teachers' mindsets and didactic skills evolved and which factors supported or hindered their growth. The findings show that long-term engagement, team-based learning, peer modeling, and coaching on the job were key to effective professionalization. These insights provide practical implications for institution-wide faculty development and onboarding new colleagues. In 2025, the outcomes will inform a new university-wide development program to equip staff for innovative, feedback-rich education aligned with the university's renewed educational vision.

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12 June 2026 10:00 - 11:30

Language Center 205

Single Paper

Higher Education, Teaching and Teacher Education

Single Paper paper_type_1 session 5

Keywords: Collaborative learning, Higher education, Pre-service teacher education, Problem-based learning, Professions and applied sciences, Reflection, Teacher education, Teacher professional development, Teaching innovation or innovative teaching practices

Interest group: SIG 04 - Higher Education, SIG 11 - Teaching and Teacher Education

Chairperson: Tamar Voss, University of Freiburg, Germany

Experiential learning and professional identity development

Keywords: Higher education, Problem-based learning, Professions and applied sciences, Reflection

Presenting Author: Chev van Dorresteijn, University of Amsterdam, Netherlands; **Co-Author:** Bastian de Jong, University of Amsterdam, Netherlands; **Co-Author:** Rosa Möhrlein, University of Amsterdam, Netherlands

Professional identity development (PID) has become an important focus in legal education, yet evidence on how to effectively foster it remains limited. This study explores the role of experiential learning (EL)—defined as learning through reflecting on experiences—in supporting different dimensions of PID. Interviews were conducted with fifty Dutch law students engaged in courses featuring three types of EL: case-based, simulation-based, and service-based. Findings suggest each type supports PID differently. Case-based EL, though structured and less authentic, strengthens motivation and self-efficacy in research and writing. Simulation-based EL, moderately authentic, enhances self-image as practitioners and verbal self-efficacy. Service-based EL, highly authentic and client-oriented, promotes understanding of professional standards and self-efficacy in communication and practical advice. Overall, the study underscores the need for law schools to purposefully integrate multiple EL forms rather than relying on cheaper, less effective approaches to meaningfully foster PID.

Psychology's Contributions to Teachers' Initial Training. A Systematic Review.

Keywords: Higher education, Pre-service teacher education, Teacher professional development, Teaching innovation or innovative teaching practices

Presenting Author: Carolina Carvalhal, Unidade de Investigação e Desenvolvimento em Educação e Formação, Instituto de Educação, Universidade de Lisboa, Portugal; **Co-Author:** Natalie Nóbrega Santos, Unidade de Investigação e Desenvolvimento em Educação e Formação - UIDEF, Instituto de Educação, Universidade de Lisboa, Portugal

This systematic review explores the content of psychology in teachers' initial training and early career development. It seeks to identify the main psychological topics and theories integrated into teacher preparation, the teaching methods used, and how pre-service and novice teachers apply this knowledge in their professional practice. Using the SPIDER framework to define inclusion and exclusion criteria, the review currently includes 33 empirical studies published in the last five years. Data are being managed through Rayyan and MAXQDA and assessed using the EPPI-Centre quality criteria. The analysis follows a configurative and thematic synthesis approach to construct a coherent understanding of psychology's contribution to teacher education. Preliminary results confirm ongoing debates regarding which psychological concepts are most relevant for teacher preparation and reveal a persistent gap between theoretical instruction and its practical application. These findings highlight the need for stronger connections between psychological knowledge and classroom realities.

Professional Vision of Student Teachers and Skilled Professionals in Pupils' Small-Group Learning

Keywords: Collaborative learning, Pre-service teacher education, Professional vision, Video analysis

Presenting Author: Katja Mynttinen, Turun yliopisto, Finland; **Co-Author:** Tuike Iiskala, Turun yliopisto, Finland; **Co-Author:** Juulia Lahdenperä, Turun yliopisto, Finland; **Co-Author:** Sara Routarinne, Turun yliopisto, Finland

How expertise evolves in its various stages is key to understanding teachers' professional vision as a continuum in complex collaborative learning environments. Professional vision refers to teachers' situational skills of perceiving, interpreting, and deciding how to respond to relevant classroom events. Given collaborative learning's potential for active learning, the teacher's role in it remains underexplored. This study examines how student teachers (N=13) and skilled professionals (experienced teachers, N=3; academic experts, N=3) perceive, interpret, and make decisions about pupils' small-group learning. Participants first observed authentic video clips individually, then discussed interpretations and potential responses in small groups. Discussions were video-recorded and analyzed using theory-driven content analysis. Preliminary findings show that student teachers focus on individual pupils and propose concrete, dialogue-level interventions, whereas skilled professionals emphasize group-level interaction, monitoring, and positive reinforcement. These results provide insights for research-based teacher education to better support future teachers in observing and guiding pupils' collaborative learning.

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Main Building, U4075

Single Paper

Higher Education, Lifelong Learning, Teaching and Teacher Education

Single Paper paper_type_1 session 14

Keywords: Biology, Competences, Diversity, Early childhood education, Meta-analysis, Noticing, Professional vision, Professions and applied sciences, Reasoning, Science education, Sustainability, Teacher, Workplace learning

Interest group: SIG 04 - Higher Education, SIG 11 - Teaching and Teacher Education

Chairperson: Thibaut Duthois, Ghent University, Belgium

Eye-Tracking Insights into Scientific Reasoning and Cognitive Processing in Undergraduate Students

Keywords: Biology, Reasoning, Science education, Sustainability

Presenting Author: Tomi Kiviluoma, University of Helsinki, Finland; **Co-Author:** Ilona Södervik, University of Helsinki, Finland

This study aimed to explore the associations between information processing and scientific reasoning in undergraduate biology students ($N = 33$). Participants engaged in a scenario-based case involving expository text and a scientific graph related to forest ecosystems. Scientific reasoning was measured in a task requiring integration of conceptual knowledge and analysis of the case material. To analyse differences, we divided students into two groups based on their task performance. Visual attention was analysed using eye-tracking methodology, focusing on look-back fixation duration across different sentence categories to gauge cognitive efforts and comprehension. Sentences emphasizing plants' adaptive abilities saw the most meaningful difference in processing times. The more visual attention students gave to these sentences, the more comprehensive scientific reasoning they exhibited. This study provides novel insights into differences in cognitive processes between undergraduate students with differing scientific reasoning abilities.

A meta-review of conceptualizations of diagnostic thinking and practice

Keywords: Meta-analysis, Noticing, Professional vision, Teacher

Presenting Author: Rebekka Stahnke, IPN Leibniz Institute for Science and Mathematics Education, Germany; **Co-Author:** Anika Radkowsch, IPN Leibniz Institute for Science and Mathematics Education, Germany; **Co-Author:** Daniel Sommerhoff, IPN Leibniz Institute for Science and Mathematics Education, Germany; **Co-Author:** Christin Laschke, Humboldt-Universität zu Berlin, Germany

Teachers' diagnostic thinking and practice, i.e., how they perceive, interpret, and respond to students' learning, are investigated across several research fields, including teacher diagnostic competence, noticing, professional vision, teacher judgements, assessment literacy, and formative assessment. These fields both differ and overlap in focus and terminology, potentially leading to jingle-jangle fallacies and fragmented research fields that hinder cumulative progress. This meta-review synthesized conceptualizations and aims from 42 systematic reviews and meta-analyses identified through a PRISMA-based search in major databases. Using Leuders et al.'s (2022) framework for systematizing perspectives on diagnostic thinking and practice, we analyzed overlaps and divergences of construct conceptualizations and aims within and across research fields. Results revealed conceptual variance within fields, particularly for noticing. Additionally, conceptualizations overlap across fields, for instance for teacher judgement and formative assessment. The findings highlight the need for a stronger theoretical dialogue between research communities to promote cumulative research.

Can we professionally develop teachers' visual attention?

Keywords: Diversity, Early childhood education, Noticing, Professional vision

Presenting Author: Thibaut Duthois, Ghent University, Belgium; **Co-Author:** Ruben Vanderlinde, Ghent University, Belgium; **Co-Author:** Piet Van Avermaet, Ghent University, Belgium; **Co-Author:** Maribel Montero-Perez, Ghent University, Belgium

Previous research indicates that teachers' noticing in early childhood education (ECE) is a precondition for supporting children's language development. However, linguistically vulnerable children receive less visual attention in classroom settings. This study employed mobile eye tracking within a quasi-experimental design to examine the effects of a video-based professional development intervention (PDI) on teachers' distribution of attention and children's received attention. Data were collected amongst 80 teachers and 575 children. Teachers' eye-movements were tracked while performing small-group activities. 2300 minutes of gaze data revealed that the inequality in teachers' attention distribution significantly decreased following participation in the PDI. Furthermore, teachers who completed the PDI allocated a greater share of attention to children who spoke a different home language and to those with lower speaking confidence. These findings demonstrate that video-based PDI can promote not only greater equality but also greater equity in teachers' noticing during language-stimulating practices in ECE.

Gaze patterns in clinical ward rounds – Evidence from a mobile-eye tracking study

Keywords: Competences, Professional vision, Professions and applied sciences, Workplace learning

Presenting Author:Nicolas Hofberger, Technical University of Munich, Germany; **Co-Author:**Inés Koch-Hümmeler, TUM Medical Education Center, Germany; **Co-Author:**Christian Kosel, Technical University of Munich, TUM School of Social Sciences and Technology, Germany; **Co-Author:**Jana Fritsche, TUM Medical Education Center, Germany; **Co-Author:**Tina Seidel, Technische Universität München, Germany; **Co-Author:**Pascal Berberat, TUM Medical Education Center, Germany; **Co-Author:**Martin Gartmeier, TUM Medical Education Center, Germany

Research has shown that professional vision—the ability to notice key elements in complex environments—plays a crucial role in medical practice. However, little is known about how professional vision manifests during clinical ward rounds (CWRs). This study employed eye-tracking methodology to examine gaze patterns of physicians from internal medicine and visceral surgery. We recorded twelve complete CWRs and analyzed physicians' visual focus on areas of interest (AOIs, such as the patient's face) and times of interest (TOIs) corresponding to key phases of CWRs (e.g., the opening-phase when greeting the patient). Overall, the most frequently fixated AOI was the patient's face, highlighting its central role in patient interaction. Furthermore, gaze patterns varied across the key phases, and clinical specialty comparisons revealed that internists focused more on the patient and documentation, whereas surgeons prioritized procedural elements. These insights highlight the potential of eye-tracking-based training to enhance professional vision and improve clinical decision-making.

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Porthania P668

Single Paper

Higher Education, Teaching and Teacher Education

Single Paper paper_type_1 session 35

Keywords: Content analysis, Higher education, Language, Motivation, Qualitative methods, Quantitative methods, Teacher, Teacher education, Teaching approaches

Interest group: SIG 04 - Higher Education, SIG 11 - Teaching and Teacher Education

Chairperson: Colin Jevons, Monash University, Australia

Teacher Conduct Contributing to the Decline of Learning Motivation in Remedial English Classes

Keywords: Language, Motivation, Teacher, Teacher education

Presenting Author:Masaki Makino, Kindai University, Japan

This study examines teacher conduct that contributes to the decline of learning motivation among students enrolled in English learning-support classes at Japanese universities. Eighty non-English-major students participated in surveys about teacher behaviors and attitudes perceived to negatively affect motivation. Seven demotivating traits were identified, including teaching without considering students' understanding, conducting lessons unilaterally, and ridiculing low-achieving students. Such behaviors often led students to feel ignored, anxious, or inferior, thereby diminishing their learning engagement. The results highlight the importance of teacher empathy, reflective practice, and learner-centered pedagogy in sustaining motivation among low-proficiency learners. The study concludes that teacher-centered instruction and a lack of affective awareness hinder student progress, suggesting that professional development should prioritize emotional sensitivity and inclusive classroom practices.

Motivations to become a primary school teacher: a comparison of Finnish and Danish 1st year students

Keywords: Content analysis, Motivation, Qualitative methods, Teacher education

Presenting Author:Päivi Virtanen, University of Helsinki, Finland; **Co-Author:**Tine Nielsen, UCL University College, Odense, Denmark; **Co-Author:**Anders Houe Wisnewski, UCL University College, Denmark; **Co-Author:**Louise Ziaja Christensen, UCL University College, Denmark; **Co-Author:**Lise Evalyn Hovn Larsen, UCL University College, Odense, Denmark

The young enter teacher education (TE) and aim at a teacher's career with different motivations. Identifying these motivations provides means to tackle the globally challenging high turnover rates. When teacher educators are aware of their students' motivations, when necessary, they may transform any unrealistic ideas of a teaching career to reinforce becoming teachers' career choices. This study compares Finnish and Danish primary teacher student's career motivations in the beginning of their studies. We use qualitative data i.e. students' own wordings what are their main reasons to become teachers. We expect the qualitative data will offer more nuanced motivations and possibly unforeseen factors affecting teaching career choices. Teacher career motivations in two countries are described and compared, and possible reasons behind the differences are discussed. In addition, we compare data-driven analysis results to results based on FIT-Choice theory-driven analysis.

University Staff Motives for Attending Pedagogical Training

Keywords: Higher education, Motivation, Teacher education, Teaching approaches

Presenting Author:Åsa Mickwitz, University of Helsinki, Finland; **Presenting Author:**Päivi Kinnunen, University of Helsinki, Finland; **Co-Author:**Veera Kallunki, University of Helsinki, Finland; **Co-Author:**Vilhelmiina Harju, University of Helsinki, Finland; **Co-Author:**Neea Heinonen, University of Helsinki, Finland; **Co-Author:**Ilona Södervik, University of Helsinki, Finland

University Staff Motives for Attending Pedagogical Training This study investigates university staff motives for attending pedagogical training, a key strategy for improving teaching quality in higher education. Using Self-Determination Theory (Deci & Ryan, 2012) as a framework, we explore whether motives are intrinsic (personal development) or extrinsic (career advancement or institutional expectations). A mixed-method approach was applied: an online survey (n = 238, response rate 20.7%) combined Likert-scale items adapted from SMAU and open-ended questions. Exploratory factor analysis revealed three main motives accounting for 62.8% of variance: Developing as a Teacher, Others' Expectations, and Enhancing My Career. Qualitative analysis confirmed these findings, highlighting personal aspirations to improve teaching, career-related goals, and external pressures. Results suggest that pedagogical training addresses both individual growth and institutional demands. Understanding these motives can inform the design of training programs that balance professional development with organizational requirements.

Does perceived program coherence benefit student motivation and identification?

Keywords: Higher education, Motivation, Quantitative methods, Teacher education

Presenting Author:Julia Dietrich, Catholic University of Eichstätt-Ingolstadt, Germany; **Co-Author:**Valerie Berner, Catholic University of Eichstätt-Ingolstadt, Germany; **Co-Author:**Miriam Jähne, Friedrich-Schiller-University Jena, Germany; **Co-Author:**Alina Oschwald, Philipps-University Marburg, Germany

Program coherence is regarded as essential for student learning and professional development. While its role has been documented in teacher-education programs, little is known about how students in other disciplines experience coherence or how this perception relates to motivational and identity outcomes. The present study examined (1) differences in perceived coherence among students in seven degree programs (teacher education, medicine, law, psychology, economics, biology, nutritional sciences) and (2) whether higher coherence is associated with stronger achievement motivation and greater identification with the field of study. N = 326 students completed questionnaires at the end of their first semester. Results showed that teacher students rated their program as less coherent than peers in the other fields. Latent regression analyses indicated that coherence positively predicted both academic motivation and identification. The findings highlight the relevance of strengthening coherence as a promising avenue for enhancing the quality of study programs in higher education.

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Porthania P722

Single Paper

Single Paper paper_type_1 session 38

Keywords: Competence development, Educational policy, In-service teacher education, Informal learning, Qualitative methods, Reflection, Teacher, Teacher professional development, Workplace learning

Interest group: SIG 11 - Teaching and Teacher Education

Chairperson: Rik Vangangelt, Utrecht University, Netherlands

The Burnout Aftermath: Comparing teachers returning and not returning to the classroom

Keywords: Educational policy, Qualitative methods, Teacher, Teacher professional development

Presenting Author: Laura Thomas, Ghent University, Belgium; **Co-Author:** Aron Decuyper, Ghent University, Belgium; **Co-Author:** Maxime Moens, Ghent University, Belgium; **Co-Author:** Ruben Vanderlinde, Ghent University, Belgium; **Co-Author:** Melissa Tuytens, Ghent University, Belgium

Teacher burnout is a prevalent issue with profound consequences for individuals and the educational system. While the causes and consequences of burnout have been widely studied, the “burnout aftermath” – the phase in which teachers decide whether or not to return to the classroom – remains underexplored. This qualitative, explorative study examines the enabling and constraining factors that shape this process. Semi-structured interviews are conducted with twenty teachers: ten who resumed teaching after experiencing burnout and ten who decided not to return. The data of the returners have been thematically analyzed; data collection for the non-returners is ongoing, after which a comparative analysis will be conducted. Findings are interpreted through the lens of the Job Demands–Resources theory (Bakker & Demerouti, 2017) and five key dimensions of work-related stress (Author3 et al., in review), providing insights for sustainable reintegration and teacher retention.

Financial Literacy in Adult Basic Education: Educator Needs and Challenges

Keywords: Competence development, Computer-assisted learning, Out-of-school learning, Teacher educator professional development

Presenting Author: Justas Tadge, University of Potsdam, Germany; **Co-Author:** Christin Siegfried, Universität Potsdam, Germany; **Co-Author:** Imke Meyer, Universität Bremen, Germany; **Co-Author:** Karsten Wolf, Universität Bremen, Germany; **Co-Author:** Sinja Spoede, PH Weingarten, Germany; **Co-Author:** Ilka Koppel, PH Weingarten, Germany; **Co-Author:** Jan Küster, Universität Bremen, Germany

The complexity of consumer decisions and financial products is increasing, while digitalization raises the demands for financial participation. These challenges particularly affect adults with low incomes and limited basic education. At the same time, the professionalization of educators in adult basic education is essential but hindered by precarious working conditions and limited training opportunities. The project *finally* is therefore developing a qualification approach that prepares educators to moderate and ultimately design learning circles in which financial topics are linked to digital media in authentic learning situations. Nine

interviews were conducted to identify the technical and media-related skills required by educators. The results show that not only learners but also teachers face considerable challenges in terms of digital skills, subject knowledge and self-regulation. Based on these results, an initial training programme for educators is currently being implemented and evaluated.

Pre-Service and In-Service Professional Development in and through Audio Diaries: A Systematic Review

Keywords: Qualitative methods, Reflection, Teacher professional development, Workplace learning

Presenting Author: Marjolein Deunk, University of Groningen, Netherlands; **Co-Author:** Nienke Renting, University of Groningen, Netherlands

Pre-service and in-service professionals in social sectors navigate complex social contexts in their internships and daily practice, and professionally develop while doing so, especially through reflection on specific work-related experiences (“critical incidents”). Audio diaries can serve as a rich source for studying such critical incidents and related professional development, offering a unique perspective into contextualized experiences, emotions, and reflections of pre-service and in-service professionals. We conducted a systematic review study to explore the affordances of audio diaries for studying and stimulating professional development. Included in the systematic review study are 37 papers, conducted mostly in the health and teaching professions, and embedded in constructivist and sociocultural theory. Results show that audio diaries are suitable for capturing critical incidents, and contain reflections which reveal emotional, temporal, and identity-related aspects of professional development. We conclude that audio diaries can serve as both a valuable research method and reflective tool for professional development.

Teachers and Financial Literacy A Cross-National Analysis of PISA 2018 Data

Keywords: Achievement, Comparative studies, Literacy, Student learning

Presenting Author: Rachel Feldman, Bar Ilan University, Israel; **Co-Author:** Pascale Benoliel, Bar-Ilan University, Israel

Teachers play a central role in preparing adolescents for increasingly complex financial and digital environments. This study investigates how teacher characteristics-job satisfaction, self-efficacy, and ICT use-contribute to students' financial literacy outcomes across five PISA 2018 participating countries where teacher data were collected. Using a two-level hierarchical framework integrating 30,463 students and 1,609 teachers nested within 1,780 schools, we model student and teacher predictors separately for high- and low-performing country groups. Findings show that teacher job satisfaction is a consistent positive predictor of financial literacy across contexts, while the impact of ICT use diverges: positive in low-performing countries and negligible or negative in high-performing systems. In contrast, teacher self-efficacy shows limited direct association. Results highlight the importance of teacher well-being, context-specific digital pedagogies, and school-level support conditions. Implications emphasize the need to strengthen teacher education and professional development to promote equitable financial learning opportunities for youth.

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Porthania P617

Single Paper

Teaching and Teacher Education

Single Paper paper_type_1 session 23

Keywords: Adaptive learning, Arts, Assessment methods and tools, Evidence-based teaching, Phenomenography, Pre-service teacher education, Quantitative methods, Research-based teaching, Self-efficacy, Synergies between learning; teaching and research, Teacher educator, Teacher educator professional development

Interest group: SIG 11 - Teaching and Teacher Education

Chairperson: Esther Canrinus, University of Agder, Norway

Bridging the Gap Between Researchers and Teachers: Investigating Knowledge Mobilization Efforts

Keywords: Evidence-based teaching, Quantitative methods, Research-based teaching, Synergies between learning; teaching and research

Presenting Author: Caroline J. Scherer, DIPF | Leibniz Institute for Research and Information in Education, Germany; **Co-Author:** Elizabeth Farley-Ripple, University of Delaware, United States; **Co-Author:** Mareike Kunter, DIPF | Leibniz Institute for Research and Information in Education, Germany; **Co-Author:** Ulrike Hartmann, DIPF | Leibniz Institute for Research and Information in Education, Germany

Adopting a comparative perspective, this study explores how educational researchers in Germany and the US design and conduct research projects in ways that may facilitate knowledge mobilization and bridge the research-practice gap. Drawing on the conceptual framework of Farley-Ripple et al. (2018), we focus on the research production side and examine the six interrelated dimensions of evidence, dissemination, interpretation, participation, frequency, and decision stage. Data were collected through an online survey of educational researchers working on projects focusing primary and secondary education, with 341 respondents in the US and 159 in Germany. Initial descriptive analyses indicate that most researchers in both contexts engaged school practitioners at various stages of the research process and deliberately shared their research findings with them. Comparative analyses with US data will further explore cross-cultural differences and factors supporting knowledge mobilization, thereby contributing to efforts to strengthen connections between educational research and school practice.

Facilitators' Readiness for Implementing PD: A Social Cognitive Perspective

Keywords: Quantitative methods, Self-efficacy, Teacher educator, Teacher educator professional development

Presenting Author: Ella Hansen, TU Dortmund University, Germany; **Co-Author:** Rebekka Stahnke, IPN Leibniz Institute for Science and Mathematics Education, Germany; **Co-Author:** Christin Laschke, Humboldt-Universität zu Berlin, Germany

Professional development (PD) can support the dissemination of innovative teaching approaches. Within cascade models, facilitators play a key role since they provide teacher PD independently. Drawing on the Social Cognitive Theory (SCT; Bandura, 1986, 1997), this study examined how facilitators' beliefs about

efficacy to perceived feasibility and finally to acceptance. Indirect effects confirmed that collaboration influenced acceptance primarily through self-efficacy and feasibility. Findings highlight the importance of social and personal factors for facilitators' views on the PD programme they are expected to implement. Thus, supporting collaboration and self-efficacy during facilitator preparation may strengthen these views and thereby foster a sustainable transfer or innovations.

Development and Evaluation of an Instrument for Personalization in Teacher Education

Keywords: Adaptive learning, Assessment methods and tools, Pre-service teacher education, Quantitative methods

Presenting Author:Eva Weiß, LMU Munich, Germany; **Co-Author:**William Boone, Miami University, United States; **Co-Author:**Marie Irmer, LMU Munich, Faculty of Biology, Biology Education, Germany; **Co-Author:**Dagmar Traub, Ludwig-Maximilians-Universität (LMU), Germany; **Co-Author:**Birgit J. Neuhaus, LMU Munich, Germany

Reflecting on instructional quality is crucial for developing teaching expertise. Video-based simulations enable pre-service teachers (PSTs) to apply knowledge while fostering reflection skills. For example, the simulation *DiKoBi* presents authentic biology classroom scenarios and requires PSTs to reflect on them using the concept of Professional Vision—the ability to notice and interpret events relevant to student learning. Based on the Refined Consensus Model of Pedagogical Content Knowledge (PCK), this study introduces an 80-item single-choice test to assess PSTs' personal PCK (pPCK) regarding key aspects of instructional quality for biology lessons. The instrument was administered to 99 biology PSTs at a German university. Rasch analyses, comparison of theory and results, and statistical tests suggested strong reliability and validity. This instrument may offer an efficient means to measure pPCK and could serve as a foundation for personalizing adaptive learning environments like *DiKoBi*, thereby further supporting PSTs' professional knowledge acquisition and reflection skills.

Research-based visual arts education in teacher training in Finland

Keywords: Arts, Phenomenography, Research-based teaching, Teacher educator

Presenting Author:Seija Kairavuori, University of Helsinki, Finland

This study describes and analyzes the views of teacher-researchers on research that develops visual arts education, as well as the significance of research in their work. This study focuses on teacher-researchers in teacher education in Finland. Seventeen teacher educators responded to an electronic questionnaire containing multiple-choice questions about relevant research perspectives, topics, and methods for the period 2020–2025. Open-ended questions explored views on the relationship between research and teaching and the future of the research field. This presentation focuses on the open-ended responses, which were analyzed using phenomenographic analysis. The results show that research in the field is diverse and strongly linked to teacher educators' teaching responsibilities and students' perspectives. The connection between research and teaching is seen as essential for developing expertise. While there is a clear vision for the future of research, a lack of resources challenges its implementation.

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Main Building U4080

Single Paper

Assessment and Evaluation, Teaching and Teacher Education

Single Paper paper_type_1 session 29

Keywords: Assessment methods and tools, Attitudes and beliefs, Competence development, Early childhood education, Educational technology, Evidence-based teaching, Higher education, Psychometrics, Teacher education, Teacher professional development

Interest group: SIG 04 - Higher Education, SIG 11 - Teaching and Teacher Education

Chairperson: Birgitte Lund Nielsen, Denmark

Quality in Early Childhood Education and Care – A Self-Assessment Instrument

Keywords: Assessment methods and tools, Early childhood education, Psychometrics, Teacher education

Presenting Author:Natalie Nóbrega Santos, Unidade de Investigação e Desenvolvimento em Educação e Formação - UIDEF, Instituto de Educação, Universidade de Lisboa, Portugal; **Co-Author:**Mónica Pereira, Ispa – Instituto Universitário, EDUNOVA.ISPA, Portugal; **Co-Author:**Ana Teresa Brito, Ispa – Instituto Universitário, EDUNOVA.ISPA, Portugal; **Co-Author:**Carla Fernandes, EDUNOVA.ISPA, Portugal; **Co-Author:**Lourdes Mata, Ispa – Instituto Universitário, EDUNOVA.ISPA, Portugal

Reflective practices are vital for professional growth in Early Childhood Education and Care (ECEC). This paper introduces EduIn&Out Self-Assessment Tool: Quality in the Organisation of ECEC Environments, a comprehensive questionnaire designed to evaluate educators' perceptions of six aspects of the ECEC environment, including space and equipment (indoor and outdoor), time management and routines, family and children participation, educators' collaboration, and organisational shared goals. It also gathers educators' characterisation of their pedagogical dynamics (flowing, children's agency, and the use of indoor and outdoor contexts), associated with the quality of the educational environment. Completed by 802 ECEC educators (children's ages 3–6), the tool demonstrated good validity and reliability. Educators reported higher quality in time and routine organisation, but lower quality in outdoor spaces and participation. Enhanced quality was associated with more stimulating, child-centred routines that balanced indoor and outdoor activities. Overall, the findings highlight the tool's potential for reflection.

Psychometric Modelling and Validation of VR-Classroom Simulations in Teacher Education

Keywords: Assessment methods and tools, Educational technology, Higher education, Teacher education

Presenting Author:Julia Mendzheritskaya, Goethe-Universität Frankfurt, Germany; **Co-Author:**Miriam Hansen, Goethe-Universität Frankfurt, Germany; **Co-Author:**Sebastian Breitenbach, Goethe-Universität Frankfurt, Germany; **Co-Author:**Denis Federiak, Goethe-Universität Frankfurt, Germany

Although virtual reality (VR) classroom simulations are increasingly recognised as powerful tools for developing teaching skills, their use for assessment in teacher education remains limited. This study evaluates an IRT-based analytical framework for estimating the psychometric quality of VR classroom simulations, exploring its implications for instructional design. Data were collected from 156 teacher education students who engaged with *Clasivir 1.0*, a VR classroom simulation designed to support classroom management skills. The results demonstrated a strong model fit and stable parameter estimates, confirming that *Clasivir 1.0* can be successfully implemented as an assessment tool. Furthermore, the study makes recommendations to improve the precision with which VR simulations based on decision trees measure outcomes, such as using deeper tree structures and more balanced response paths. Finally, the study considers the implications for sustainability and digital skills development in teacher education.

From Competence to Confidence: Empowering Trainers and Teachers to Evaluate Digital Competence

Keywords: Assessment methods and tools, Competence development, Evidence-based teaching, Teacher education

Presenting Author:Doris Ittner, University of Teacher Education Bern, Switzerland; **Co-Author:**Maria Pannatier, Swiss Federal Institute of Technology, EPFL Lausanne, Switzerland; **Co-Author:**Notari michele, PHBern, Switzerland; **Co-Author:**Sunny Avry, Ecole Polytechnique Fédérale de Lausanne (EPFL), Switzerland

Evaluating teachers' digital competence remains a persistent challenge due to the gap between research and implementation. This study investigates the impact of the Digital Training Companion (DTC), a web-based application employing data science and AI to enhance formative evaluation in teachers' digital competence training. A one-group pre–post mixed-methods design combined subjective and objective measures to study teachers' competence development, motivation, and classroom transfer. Quantitative and qualitative results indicate significant perceived gains in digital competence and motivation, particularly in assessment area ($p = .002$; $d = 1.32$), while objective TPK showed no significant change. Multilevel analysis revealed that teachers perceived easiness and confidence of DTC use predicted pupils perceived digital competence ($\beta = 0.169$; $p = .045$) and situational interest ($\beta = 0.413$; $p = .000$), indirectly validating the tool's potential. The results highlight the DTC as a promising mechanism for data-informed, sustainable professional training linking teachers' competence growth with pupils' learning outcomes.

Conceptualizing Epistemic Beliefs in Schools: A Systematic Review of Measurement Approaches

Keywords: Assessment methods and tools, Attitudes and beliefs, Psychometrics, Teacher professional development

Presenting Author:Marcel Mayr, Johannes Kepler University Linz, Austria; **Co-Author:**Andrea Wisenöcker, Johannes Kepler University Linz, Austria; **Co-Author:**Jana Groß Ophoff, University of Teacher Education Thurgau, Germany

Investigating teachers' and students' epistemic beliefs has long been central to understanding classroom processes. Numerous instruments have been developed to assess these beliefs, yet debates persist regarding their conceptualization and measurement. This systematic review synthesizes self-report questionnaires assessing epistemic beliefs in the school-context, focusing on their theoretical models, psychometric properties, and cross-cultural validity. Studies published from 1990 onward were identified across seven databases and categorized as original, validation, translation, or adaptation studies. In total,

111 studies were included, with instruments translated across 17 languages and 53 attempts to replicate a factor structure registered. Results show shared underlying constructs but ongoing conceptual fragmentation, limited replicability, and insufficient psychometric properties. Cross-cultural validity was rarely established, and many studies used instruments with questionable reliability and validity. Overall, findings highlight the need for cautious instrument selection, methodological rigor, and greater transparency to advance integrated, context-sensitive approaches in epistemic belief research.

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Porthania P723

Single Paper

Higher Education, Motivational, Social and Affective Processes, Teaching and Teacher Education

Single Paper paper_type_1 session 18

Keywords: Artificial intelligence, Competence development, Higher education, Motivation, Student learning, Student-teacher interactions, Teacher educator professional development, Teacher professional development, Teaching approaches

Interest group: SIG 04 - Higher Education, SIG 11 - Teaching and Teacher Education

Chairperson: Siru Myllykoski-Laine, University of Jyväskylä, Finland

Preparing Faculty to 'Teach' Skills: Pedagogical Principles and Development Needs

Keywords: Competence development, Higher education, Teacher educator professional development, Teaching approaches

Presenting Author: Laurie Delnoij, Maastricht University SBE, Ts 53, Netherlands; **Co-Author:** Ainsley Loudoun, Maastricht University, Netherlands; **Co-Author:** Inken Gast, Maastricht University, Netherlands; **Co-Author:** Simon Beusaert, Maastricht University, Netherlands

As higher education increasingly emphasises generic skills such as collaboration, self-regulation, and critical thinking, educators face growing expectations to design learning environments that foster guided autonomy, active engagement, and contextualised learning. Yet limited empirical research and insufficient educator preparation mean these approaches are often implemented superficially. This study therefore investigates how key pedagogical principles for skill development are enacted in practice and identifies the competencies and training educators require to implement them effectively. Interviews with educators, educational experts, and students were analysed thematically using deductive and inductive coding. Findings reveal core principles and associated practices characterising effective skill-development pedagogy, alongside clear alignments between pedagogical intent and enactment. The study also identifies essential educator capacities – related to relational sensitivity, a skill-developer identity, and reflective practice – and shows these are best developed through experiential, socially grounded faculty development, such as opportunities for trial and reflection and participation in communities of practice.

Supporting student agency in higher education: Teachers' reflections on pedagogical practices

Keywords: Higher education, Student learning, Student-teacher interactions, Teaching approaches

Presenting Author: Siru Myllykoski-Laine, University of Jyväskylä, Finland; **Co-Author:** Päivikki Jääskelä, University of Jyväskylä, Finland; **Co-Author:** Maarit Arvaja, University of Jyväskylä, Finland

The present study examines university teachers' perceptions of student agency and practices facilitating student agency in university courses and degree programs. The teachers represent the sub-fields within natural and educational sciences. The data consist of teachers' (N = 4) co-constructed and individual reflections through group discussions and one-on-one interviews. Findings through thematic analysis showed three types of practices as crucial for supporting student agency: (1) Being present and accessible for students, (2) Creating safe and supportive environments, (3) Promoting meaningful learning. Teachers also perceived challenges in supporting student agency. These were related to balancing ideal expectations of the teacher's role and recognizing opportunities and situations to promote student agency at different stages of the degree programme. While the study provides tools for teaching practice, it highlights the need to further develop co-designed practices among teachers.

Lecturers' Enthusiasm and Students' Interest: Mediated by Motivational Climate

Keywords: Higher education, Motivation, Student-teacher interactions, Teaching approaches

Presenting Author: Lena Kegel, University of Münster, Germany; **Co-Author:** Maike Trautner, Marburg University, Germany

Lecturers' enthusiasm plays a crucial role in determining students' interest. Multiple mechanisms are discussed to mediate this relation, including lecturer-induced motivational climate. To better understand lecturers' enthusiasm in the higher education context, the present study investigates relevance support and mastery goal structure as mediators for the relation of lecturer's enthusiasm and student's interest. We assessed N = 282 students' self-reports within 19 courses at German universities and applied multi-level mediation analyses. Relevance support mediated the relation between lecturers' enthusiasm and students' interest both between courses and within courses. In addition, mastery goal structure mediated the relationship between lecturers' enthusiasm and students' interest at the within-course level. Both approaches to motivational climate represent ways to better understand the impact of enthusiasm and to promote university students' interest. For the conference, the discussion will be expanded by supplementing students' self-reports with lecturers' self-reports on enthusiasm, based on ongoing data collection.

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Language Center 204

Single Paper

Teaching and Teacher Education

Single Paper paper_type_1 session 22

Keywords: Attitudes and beliefs, Developmental processes, Digital learning, Language, Mathematics, Mixed methods, Pre-service teacher education, Teacher education, Teacher educator, Teacher professional development

Interest group: SIG 11 - Teaching and Teacher Education

Chairperson: Nina Katajavuori, University of Helsinki, Finland

Development of preservice teachers' PID skills regarding classroom management across two practicums

Keywords: Developmental processes, Mixed methods, Pre-service teacher education, Teacher professional development

Presenting Author: Henna Vilppu, University of Turku, Finland; **Co-Author:** Sotiria Varis, University of Jyväskylä, Finland; **Co-Author:** Tuike Iiskala, University of Turku, Department of Teacher Education, Finland; **Co-Author:** Mirjamaija Mikkilä-Erdmann, University of Turku, Finland

The study aimed to examine preservice primary teachers' (N = 50) perceptions, interpretations and decision-making (PID) with regard to classroom management, an area proven to be challenging for beginning teachers. The study utilised a longitudinal design in which a classroom video was used to capture preservice teachers' thinking at the very beginning of their studies, after the first teaching practicum and after the second teaching practicum in a typical Finnish teacher education programme. Their written responses concerning the video were analysed using a pre-existing coding scheme (Stahnke & Blömeke, 2021) comprising PID skills, focus of analysis, and classroom management dimensions. The findings showed that PID skills remained stable or decreased as the final measurement approached. The focus of the responses shifted from the students to the teacher, and mentions of classroom management dimensions increased towards the final measurement. Practical implications for teacher education are discussed.

Training Future Teachers: The Role of School Principals

Keywords: Mixed methods, Teacher education, Teacher educator, Teacher professional development

Presenting Author: Mirjam Kocher, University of Teacher Education Zurich, Switzerland; **Co-Author:** Anna Locher, University of Teacher Education Zurich, Switzerland

To date, research has not addressed the role of school principals in vocational training of teacher education. The present study investigates this desideratum and asks: 1.) What criteria do the school principals apply for the selection of mentor teachers, and what qualification requirements for them do they see? 2.) What tasks and requirements do they ascribe to the role and activity of mentor teachers as well as to themselves in vocational training? The findings presented are from a qualitative content analysis of 19 expert interviews and a survey with 210 school principals. The interview analysis was carried out with sufficient intercoder reliability using a deductively and inductively developed category system. A total of around 1500 codes were set. Results show that the variety of tasks of a mentor teacher, their further development and support do not come into school principals' focus. Also, they are only selectively present for teacher students.

Innovative Digital Shared Book Reading Training to Support Multilingual Language Education

Keywords: Digital learning, Language, Mixed methods, Teacher professional development

Presenting Author: Christian Müller, Ludwig-Maximilians-Universität-München, Germany; **Presenting Author:** Laura Avemarie, Ludwig-Maximilians-Universität München, Germany; **Co-Author:** Claudia Becker, Humboldt Universität zu Berlin, Germany

In increasingly multilingual classrooms, teachers face the challenge of creating inclusive and equitable learning environments that value all children's linguistic backgrounds. Shared Book Reading (SBR) effectively supports language and literacy development, yet educators often feel uncertain about integrating multiple languages or modalities. The *Readi (Reading Digital)* project (www.projekt-readi.de), funded by the German Federal Ministry for Education, Family Affairs, Senior Citizens, Women and Youth (01JM2205A/B), developed an online training on multilingual and bimodal SBR featuring 16 digital picturebooks in four spoken and one sign language, with tutorials and hands-on modules. A mixed-methods study ($N = 118$) showed that participants significantly improved their knowledge ($p < .001$, $\eta^2 = .14$), attitudes ($p = .006$, $\eta^2 = .10$), and practices related to multilingual SBR, with engagement increasing from 53% to 66%. Qualitative data confirmed greater confidence and reduced uncertainty. Digital professional development can thus foster inclusive, adaptive, and linguistically diverse literacy practices.

Class teachers' beliefs on classroom skill composition and effects on mathematics learning

Keywords: Attitudes and beliefs, Mathematics, Mixed methods, Teacher professional development

Presenting Author: Eeva Haataja, University of Helsinki, Finland; **Co-Author:** Laura Niemi, University of Helsinki, Finland; **Co-Author:** Reito Visajaani Salonen, University of Helsinki, Finland; **Co-Author:** Anu Laine, University of Helsinki, Finland

Teachers' beliefs about their students' capacity to learn are a strong and well-established predictor of academic achievement, particularly in elementary education. This study examines how Finnish classroom teachers describe the association of teacher-rated affiliation and control with students, the skill composition of their class, and their mathematics teaching practices. Using a mixed-methods approach, the analysis combines teacher interviews and two-level structural equation modeling to explore how teacher-rated constructs relate to students' mathematics achievement and perceived competence. The findings suggest that although teachers emphasize high affiliation, they report consistent effort on control practices in math instruction regardless of their class's skill composition. The only teacher-rated factor that influenced class-level mathematics performance was the proportion of high-achieving students. In an era of increasing classroom segregation, teachers should critically reflect on the most effective practices for teaching each specific class.

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Single Paper

Higher Education, Motivational, Social and Affective Processes

Single Paper paper_type_1 session 8

Keywords: At-risk students, Collaborative learning, Competence development, Diversity, Doctoral education, Higher education, Mixed methods, Motivation, Quantitative methods

Interest group: SIG 04 - Higher Education

Chairperson: Izaak Dekker, Amsterdam University of Applied Sciences (AUAS), Netherlands

What motivates students to participate in honors programs?

Keywords: Diversity, Higher education, Motivation, Quantitative methods

Presenting Author: Annegien Langeloo, Hanze University of Applied Sciences, Netherlands; **Co-Author:** Berber Roorda, Hanze University of Applied Sciences, Netherlands; **Co-Author:** Jorien Vugteveen, Hanze University of Applied Sciences, Netherlands; **Co-Author:** Elanor Kamans, Hanze University of Applied Sciences, Netherlands; **Co-Author:** Esther Canrinus, University of Agder, Norway

Honors programs offer ambitious students challenges beyond the standard curriculum. While these students are typically motivated, their underlying motives can vary. This study applied self-determination theory to identify motivational profiles within an honors student population and examined how background characteristics relate to these profiles. We assessed a broad range of motivational constructs, including amotivation, three types of extrinsic motivation (external, introjected, identified regulation), and three types of intrinsic motivation (to know, to accomplish, to experience stimulation). Three distinct profiles emerged: 'Overall High', 'Knowledge-Oriented', and 'Controlled'. Notably, student characteristics were unevenly distributed across profiles. Male and international students were more likely to exhibit controlled motivation, while female and domestic students showed stronger intrinsic motivation. These findings offer insights into the diversity of student motivation in honors education and suggest implications for tailoring support and program design.

Understanding Sense of Belonging and Authenticity of Students with Support Needs: A Diary Study

Keywords: At-risk students, Diversity, Higher education, Mixed methods

Presenting Author: Richard Horenberg, UMC Utrecht, Netherlands; **Presenting Author:** Anne-Roos Verbree, University Medical Center Utrecht, Netherlands; **Co-Author:** Gönlül Dilaver, UMC Utrecht, Netherlands; **Co-Author:** Jeroen Janssen, Utrecht University, Netherlands; **Co-Author:** Marieke van der Schaaf, University Medical Center Utrecht / Utrecht University, Netherlands; **Co-Author:** Leoniek Wijngaards-de Meij, Utrecht University, Netherlands; **Co-Author:** Annet van Royen-Kerkhof, University Medical Center Utrecht, Netherlands; **Co-Author:** Willem Van Rhenen, Nyenrode Business University, Netherlands

Students with support needs encounter various challenges which hinders them from experiencing a strong sense of belonging and authenticity. Since these experiences are rarely studied, this research explores these students' belonging and authenticity experiences in the higher education context. Moreover, we intend to foster their belonging and authenticity by having students participate in an intake interview and a brief self-affirmation reading-writing exercise followed by keeping a daily diary for one week. Qualitative and quantitative data were collected, providing insights into the value of a diary for students with a support needs, various barriers to belonging and authenticity experiences such as shame and stereotypes, but also students' strengths and positive experiences. Our research aims to support students with support needs and contribute to increasing educational accessibility. Eventually, this may lead to improved student outcomes and thriving of students who have additional needs.

Conceptual and Methodological Barriers to Inclusive Higher Education Research: A Scoping Review

Keywords: Collaborative learning, Diversity, Higher education, Mixed methods

Presenting Author: Rianne van der Feen, HZ University of Applied Sciences, Netherlands; **Co-Author:** Martijn Leenknecht, HZ University of Applied Sciences, Netherlands; **Co-Author:** Alexander Minnaert, University of Groningen, Netherlands

In Dutch higher education, on average 12% of first-year students drop out. This scoping review examines research methodologies and perspectives used to study student-student interaction in support of inclusive higher education. Hence, eligible studies were empirical, set in higher education, and reported educational outcomes linked to study-related student-student interaction. Searches were completed on September 25, 2024, across ERIC, Psychology and Behavioral Sciences Collection, and APA PsycInfo, with a preregistered protocol (OSF: d7zhm). Active machine-learning (ASReview Lab 1.6.3) was used to reduce selection bias. Included studies ($n = 46$) were coded for methodological characteristics, theoretical perspectives, interaction modalities, and outcomes relevant to inclusive education. Most studies used quantitative, variable-centered designs (76%); fewer employed qualitative, person-centered approaches (24%). Of these, 11% used mixed methods. The lack of theoretical and methodological coherence across studies highlights the need for more integrative approaches to researching inclusive education.

Doctoral Supervisors' Self-Reported Development Needs and Learning Trough Supervision Training

Keywords: Competence development, Diversity, Doctoral education, Higher education

Presenting Author: Anna Vilhunen, Aalto University, Finland; **Co-Author:** Anna Parpala, University of Helsinki, Finland; **Co-Author:** Olli Varis, Aalto University, Finland; **Co-Author:** Maija Taka, Aalto University, Finland

ABSTRACT

Doctoral supervision is currently under the pledge of rapidly evolving demands. Notwithstanding, it is still often navigated without formal pedagogical training. This study uses the mixed methods approach to explore the key learning goals and learning in 81 participants' pre- and post- course essays within an elective pedagogical course. The pre-course reported learning goals focused on their personal self-management and balancing between a directive approach and supporting supervisees' independence, while the reflected learning focused on knowledge of pedagogical theories and understanding of various supervision situations. Even though the course materials were the primary support for learning, peer interaction was identified as crucial for supervisors' continuous development, underscoring the course's importance in strengthening the supervisor community. The level of equity, diversity, and inclusion (EDI) understanding varied among participants, indicating a need for enriched EDI content in such courses.

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Single Paper

Learning and Instructional Technology, Teaching and Teacher Education

Single Paper paper_type_1 session 10

Keywords: Beginning teachers, Educational technology, Mixed methods, Pre-service teacher education, Professional development interventions, Self-efficacy, Survey research, Teacher education

Interest group: SIG 11 - Teaching and Teacher Education

Chairperson: Veera Lampinen, University of Helsinki, Finland

Prevention and management of school violence – an intervention study on Finnish teacher education

Keywords: Mixed methods, Professional development interventions, Self-efficacy, Teacher education

Presenting Author: Pepita Hemilä, University of Helsinki, Finland; **Co-Author:** Kira Hurme, City of Espoo, University of Helsinki, Finland; **Co-Author:** Tarmo Kyllönen, City of Espoo, Finland

This doctoral thesis is an intervention study that addresses a critical gap in Finnish primary teacher education regarding preparedness for preventing and managing school violence. Despite rising reports of student aggression towards teachers and peers, teacher training lacks content on safety and violence prevention. This study comprises two research articles: one employing mixed methods to assess intervention effects, and another comparing intervention and control groups longitudinally. A 2 ECTS university course was developed, integrating legal frameworks, preventive strategies, and physical restraint training. Self-efficacy was measured using an adapted TEIP scale, including a new dimension on managing aggressive students. Preliminary findings indicate positive shifts in participants' self-efficacy. Qualitative data from reflective learning diaries further explore behavioural changes post-intervention. This research contributes to the underexplored area of safety-focused interventions in teacher education and advances longitudinal and qualitative approaches in self-efficacy studies.

Four Years of Early Career Teacher Self-Efficacy Data Analysis in One Canadian Province

Keywords: Beginning teachers, Mixed methods, Self-efficacy, Survey research

Presenting Author: Thelma Gunn, University of Lethbridge, Canada; **Co-Author:** Philip McRae, The Alberta Teachers' Association, Canada; **Co-Author:** Peter Kellett, University of Lethbridge, Canada

Between 2019-2020 and 2024-2025 annual survey data have been collected through the Alberta Teachers' Association (ATA) from beginning teachers in their first three years of practice. Over the last four years the *Teachers' Sense of Efficacy Scale* (Short Form) (TSES) (Tschannen-Moran & Woolfolk Hoy, 2001) has been included to assess teacher self-efficacy. Through both quantitative and qualitative analyses, changes in teacher self-efficacy have been observed. Declines in the Student Engagement and Classroom Management Factor scores are concerning as they may be associated with the potential for burnout, job dissatisfaction, and career attrition. By examining additional professional and personal qualitative responses gathered in the yearly surveys, we aim to gain a deeper insight into the possible causes of declining teacher self-efficacy and identify possible strategies and solutions for improving early career experiences.

Building Preservice Teachers' Self Efficacy to Support Early Career Retention

Keywords: Beginning teachers, Mixed methods, Pre-service teacher education, Self-efficacy

Presenting Author: Thelma Gunn, University of Lethbridge, Canada; **Co-Author:** Charlotte Brenner, University of Lethbridge, Canada; **Co-Author:** Doug Checkley, University of Lethbridge, Canada

High rates of early career attrition remain a global concern, with class size increases, post-pandemic disruptions, and funding constraints contributing to stress and diminished job satisfaction. Teacher self-efficacy (TSE) as a protective factor for resilience and retention, and preservice preparation is a key period for its development. This mixed-methods study examines a guided reflection assignment designed to make (TSE) explicit and actionable across coursework before preservice teachers' (PSTs) practicums. In the first semester PSTs completed the Teachers' Sense of Efficacy Scale (TSES; long form) during week one and again after eight weeks of coursework. During this period, PSTs documented and reflected on Instruction, Student Engagement, Classroom Management strategies. Preliminary results indicate increases in TSE from pre- to post-measures. Thematic analysis revealed perceived growth in overall efficacy, confidence, and strategic knowledge suggesting that structured reflection using the TSES can support adaptive efficacy beliefs and reflective habits.

Developing preservice teachers' teaching self-efficacy in a virtual classroom: Are we there yet?

Keywords: Educational technology, Mixed methods, Pre-service teacher education, Self-efficacy

Presenting Author: Eliana Brianza, University of Zurich, Institute of Education, Switzerland; **Presenting Author:** Dominik Petko, University of Zurich, Switzerland; **Co-Author:** Juliette Désiron, University of Fribourg, Switzerland

This study investigates how experienced and inexperienced preservice teachers' teaching self-efficacy develops through practice in a fully immersive virtual classroom (VR) and how it compares to microteaching. Three cohorts of preservice teachers ($N=41$; 19 experienced, 22 inexperienced) engaged in different practice sessions on giving classrooms explanations: Cohort 1 ($n=16$) had a microteaching session followed by a VR session; Cohort 2 ($n=11$) had two microteaching sessions; and Cohort 3 ($n=14$) two VR sessions. Preservice teachers' teaching self-efficacy was assessed in pretest and after each session. Findings revealed no significant differences across cohorts or environments. Although not significant, inexperienced preservice teachers displayed positive trends in their teaching self-efficacy when practicing only in one environment (both in VR or both as microteaching), whereas experienced preservice teachers showed a slight drop over time. Qualitative evidence from their comments outlines the limitations of VR and provides insights for future research, teacher education, and technology development.

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Single Paper

Higher Education, Teaching and Teacher Education

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Keywords: Artificial intelligence, Collaborative learning, Communities of practice, Critical thinking, Higher education, Language, Secondary education, Self-regulation, Social interaction, Teaching innovation or innovative teaching practices, Transformative learning, Workplace learning, Writing/literacy

Interest group: SIG 04 - Higher Education, SIG 07 - Technology-Enhanced Learning And Instruction, SIG 11 - Teaching and Teacher Education

Chairperson: Tobias Jenert, Paderborn University, Germany

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

Keywords: Artificial intelligence, Communities of practice, Social interaction, Workplace learning

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 "network." 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.

Patterns of GenAI Integration and Pedagogical Innovation: Evidence from Romania and Singapore

Keywords: Artificial intelligence, Higher education, Teaching innovation or innovative teaching practices, Transformative learning

Presenting Author:Ana Lelescu, West University of Timisoara, Switzerland; **Co-Author:**Simona Sava, West University of Timisoara, Romania

This empirical study examines how higher education educators in Romania and Singapore integrate Generative AI (GenAI) into key pedagogical functions and identifies the innovation patterns that emerge. Drawing on established concepts of pedagogical innovation and the diffusion of innovations theory, the analysis utilises data from 245 educators who participated in the 2024 International AI Survey, led by the Institute for Adult Learning at the Singapore University of Social Sciences. Results show significant differences in the frequency of GenAI use, with only 35% of Romanian educators using GenAI daily or weekly, compared to 64% in Singapore, reflecting different stages of diffusion. Singaporean educators report broader and more positive pedagogical impacts, while both groups identify assessment as a challenge. This study contributes to international comparative research by documenting innovation patterns within a broader global dataset.

Teaching Analytical Reading in the Age of Generative Artificial Intelligence

Keywords: Artificial intelligence, Collaborative learning, Critical thinking, Secondary education

Presenting Author:Elsa Nguyen, Haute école pédagogique du canton de Vaud (HEP Vaud), Switzerland

This paper presents a doctoral research project in literature didactics conducted at the University of Lausanne and the University of Teacher Education Vaud (HEP Vaud). The study explores how collaborative research can function as both a methodological framework and a reflexive mirror of analytical reading practices in the age of Generative Artificial Intelligence (GAI). Conducted with six upper-secondary teachers from the cantons of Vaud and Fribourg, the project examines how the integration of GAI into literature classes can foster students' critical thinking while supporting teachers' professional development. Grounded in the didactics of first-language literature, the philosophy of technology, and digital literacy studies, the research follows a three-phase collaborative design (co-creation, co-operation, co-construction). Preliminary findings show that GAI reveals implicit didactic values and redefines teaching roles, contributing to a renewed, humanistic, and critical approach to literature education in a post-digital context.

Regulating the use of GenAI in English academic writing: a self-regulated learning perspective

Keywords: Artificial intelligence, Language, Self-regulation, Writing/literacy

Presenting Author:Zheng Zhang, The Chinese University of Hong Kong, Hong Kong

The prevalent use of Generative AI (GenAI) tools in English academic writing urgently requires students to cultivate self-regulated learning (SRL) capacity that will help them become responsible GenAI users. Guided by Zimmerman's (2000) SRL framework and Hayes's (2012) cognitive writing model, this qualitative study explores students' self-regulated writing behaviors with GenAI at an English-medium university in China. Data were collected from twenty purposively selected undergraduate students through learning logs and stimulated recall interviews. Thematic analysis of the qualitative data identified a taxonomy of 20 self-regulated writing strategies with GenAI across six writing stages. The study contributes to the currently limited research on the self-regulated use of GenAI tools in higher education. The strategy taxonomy created by the study can inform the design of strategy training and pedagogical tools in teacher education to foster L2 writers with self-regulatory skills in the era of GenAI.