



## Keynote 1

20 August 2023 09:30 - 10:30

UOM\_CH

JURE 2023 Keynote

Lifelong Learning

### Critical Thinking as a lifelong learning goal

**Keywords:** Cognitive Skills and Processes, Critical Thinking, Lifelong Learning, Problem Solving

**Interest group:**

**Chairperson:** Evropi Efthymiadou, Aristotle University of Thessaloniki, Greece

Today's world is rapidly changing, complex, and uncertain. Economic, societal, and political challenges as well as the rapid technological advancements and the recent COVID-19 pandemic have produced major changes worldwide that raise new demands and require advanced skills. The need for critical thinking in education and everyday life is imperative in order for people to be better able to think and manage changes and challenges. Critical thinking is involved in every aspect of our daily life, namely, when we solve problems, draw inferences, evaluate arguments, calculate likelihoods, and make decisions (i.e., what to buy, to believe, to support, to vote, etc.). The development of digital environments has changed profoundly the way we access, evaluate, use, and share information (or mis/disinformation) and educating people to develop critical thinking and digital information literacy skills seems a one-way street. However, teaching people from their early school years how to think critically about the relevance, validity, and reliability of huge amounts of information from various sources is a great challenge for educators who may frequently lack specific skills for this purpose and also experience the continuous change themselves. The question, then, is what kind of critical thinking skills people need in a rapidly changing world to face the challenges of Tomorrow. Nobody can deny that critical thinking skills are highly valued in our education. Whether these skills are being taught and practiced during school years as well as later in real life is still an open question. In my talk, I will focus on the need of fostering critical thinking skills as a lifelong learning goal. Specifically, first, I will present empirical evidence about school and university students' critical thinking skills as well as about the relationship between these skills and academic outcomes; second, I will focus on the evidence from interventions fostering students' critical thinking skills and discuss the factors that moderate their effectiveness; third, I will present optimal learning environments that can promote critical thinking as a Life Skill. Finally, implications for practice and future directions will be pointed out.

### Critical Thinking as a lifelong learning goal

**Presenting Author:** Panayiota Metallidou, Aristotle University of Thessaloniki, Greece

Today's world is rapidly changing, complex, and uncertain. Economic, societal, and political challenges as well as the rapid technological advancements and the recent COVID-19 pandemic have produced major changes worldwide that raise new demands and require advanced skills. The need for critical thinking in education and everyday life is imperative in order for people to be better able to think and manage changes and challenges. Critical thinking is involved in every aspect of our daily life, namely, when we solve problems, draw inferences, evaluate arguments, calculate likelihoods, and make decisions (i.e., what to buy, to believe, to support, to vote, etc.). The development of digital environments has changed profoundly the way we access, evaluate, use, and share information (or mis/disinformation) and educating people to develop critical thinking and digital information literacy skills seems a one-way street. However, teaching people from their early school years how to think critically about the relevance, validity, and reliability of huge amounts of information from various sources is a great challenge for educators who may frequently lack specific skills for this purpose and also experience the continuous change themselves. The question, then, is what kind of critical thinking skills people need in a rapidly changing world to face the challenges of Tomorrow. Nobody can deny that critical thinking skills are highly valued in our education. Whether these skills are being taught and practiced during school years as well as later in real life is still an open question. In my talk, I will focus on the need of fostering critical thinking skills as a lifelong learning goal. Specifically, first, I will present empirical evidence about school and university students' critical thinking skills as well as about the relationship between these skills and academic outcomes; second, I will focus on the evidence from interventions fostering students' critical thinking skills and discuss the factors that moderate their effectiveness; third, I will present optimal learning environments that can promote critical thinking as a Life Skill. Finally, implications for practice and future directions will be pointed out.

## Session A 1

20 August 2023 11:00 - 12:30

UOM\_A07

Invited Symposium

Learning and Instructional Technology, Learning and Social Interaction, Motivational, Social and Affective Processes

### The engaged student: emotion and motivation and its role in metacognitive processes

**Keywords:** Achievement, Computer-assisted Learning, Cooperative/Collaborative Learning, Emotion and Affect, Engagement, Higher Education, Instructional Design, Learning Analytics, Mathematics/Numeracy, Metacognition, Motivation, Quantitative Methods, Science and STEM, Self-regulated Learning and Behaviour

**Interest group:** SIG 16 - Metacognition and Self-Regulated Learning

**Chairperson:** Kerstin Kisielski, Germany

**Chairperson:** Elissavet Papageorgiou, Delft University of Technology, Netherlands

**Organiser:** Ahsen Çini, University of Oulu, Finland

**Organiser:** Laura Menschaart, TU Delft, Netherlands

**Discussant:** Jacqueline Wong, Utrecht University, Netherlands

Abstract Students' emotional and motivational beliefs are pivotal to self-regulated learning (SRL). This symposium aims to provide evidence-based insights gathered in different learning contexts to explore the relationship between emotion, motivation, and metacognitive processes. Furthermore, this symposium presents new ways in how various methods and datatypes can support SRL in individual and collaborative settings. The first two contributions of the symposium focus on exploring the relationship between emotion and metacognition, and the roles of metacognitive awareness and adaptive SRL support. Paper 1 addresses the research gap concerning the interplay between metacognitive and socio-emotional processes in regulating collaborative learning and SRL. In particular, the focus lies on epistemic emotions (here: surprise). Paper 2 focuses on the development of SRL and achievement emotions in mathematics as a multidisciplinary foundational course. The last two contributions address the topic of student effort during specific learning tasks. Paper 3 takes a motivational perspective by asking how the level of task-structure affects students' expectancy, value, and cost-related beliefs. Finally, paper 4 examines different patterns of student effort by using a student engagement lens. Our discussant will add an educational psychology perspective, with special regard for the role of technology and multimodal data. The implications of the findings presented in the papers will be discussed, and their role in developing our understanding of metacognition in learning and education.

### The Interplay between Task Difficulty and Emotions

**Presenting Author:** Ahsen Çini, University of Oulu, Finland; **Co-Author:** Sanna Järvelä, University of Oulu, Finland; **Co-Author:** Muhterem Dindar, Tampere University, Finland

In practice, learners make many decisions about what, how, when, and where to learn by developing "metacognitive awareness" of their own learning. It is an important aspect of learning and problem-solving, as it allows individuals to monitor and adjust their thinking strategies to improve their performance. Research has showed that the prominent indicator of metacognitive awareness is perception of task difficulty. Also, emotions provide crucial cues to metacognition during learning. Currently, there is limited knowledge on the interplay between emotions and metacognitive processes. Considering this, the current study investigates how emotions are related to task difficulty in collaborative learning (CL). Higher education students (N=107) collaborated in triads and filled situated self-reports

that assessed their individual metacognitive interpretations about task difficulty. Group members' interactions were video recorded and facial expression data were created by post-processing video-recorded data. The results showed that students who have high metacognitive awareness find the task easier and the current findings provide us new methods and insights regarding individuals who display happiness use better learning strategies and are metacognitively more accurate during CL. This study may contribute to the effect of metacognitive characteristics on learning processes and outcomes and help us to better understand how learners use their metacognitive awareness in CL tasks and can help AI in education training systems by recognising when students are having trouble understanding the tasks or whether they are aware of their metacognition.

#### **CANCELLED: Development of self-regulated learning and achievement emotions (...)**

**Presenting Author:**Laura Menschaart, TU Delft, Netherlands; **Co-Author:**Martine Baars, Erasmus University Rotterdam, Netherlands; **Co-Author:**Annoesjka Cabo, Delft University of Technology, Netherlands

This presentation has been cancelled and will not be presented at the JURE 2023 conference.

Abstract Our advancing 20th century society demands analytical and problem-solving skills which are fostered in mathematics education. Moreover, mathematics as foundational course can be provided to non-mathematics disciplines by mathematicians through Service Mathematics Education (SME). However, failure rates in foundational courses are high. Self-regulated learning (SRL) and positive Achievement Emotions (AE) are generally assumed to correlate to positive learning outcomes and have been researched extensively in mathematics. Although some studies in this field have explored SRL and AE together, longitudinal studies are largely lacking, as well as explorations of a broad range of AE. The current study investigated the development of SRL and a broad range of mathematics related AE, and their relationship to each other and to academic grades over a full semester. First year university students filled out the Motivated Scales for Learning Questionnaire and the Academic Emotions Questionnaire - Mathematics at three moments during a full semester. Data collection will be completed in February. Preliminary results show a decline in SRL and negative AE, and an increase in positive AE. The results regarding AE are contrary to expectation, as an opposite trend was expected - increase of negative AE and decline of positive AE - based on earlier research. Considering the beneficial influence which is assigned to positive AE with regard to academic success, these preliminary results on the spontaneous development of AE in SME are tentatively reassuring.

#### **Exploring the impact of task-structure on self-regulated learning and motivation**

**Presenting Author:**Kerstin Kisielski, TU Dresden - Psychology of Learning and Instruction, Germany; **Co-Author:**Susanne Narciss, TU Dresden, Germany

Abstract A core component of instructional practice is structuring learning tasks or assignments. Well-structured tasks provide students with clear task goals and sub-goals, as well as clear standards and criteria for task completion. By doing so, they offer students guidance towards successful task-completion. In contrast, tasks that are not well-structured lack clarity regarding their sub-goals, standards and criteria. Thus, students must figure out on their own, what sub-goals and standards should be met. Thus, structuring learning task has a beneficial effect on student's performance. This beneficial effect is most likely because providing students with a well-structured task supports them in constructing an accurate definition of the learning task. Even though the provision of structure has been emphasized by several authors as influencing students' self-regulated learning and motivation, studies on task structure and its effect on student's motivation are scarce. Thus, this study aims at examining the effects of the level of task-structure on students' motivation. After working on either a task with a high or a low level of structure, students' motivation in terms of expectancies, values and costs was assessed. Comparative analyses revealed that students provided with a high level of task-structure perceive lower levels of costs than students with a low level of task-structure. In this study the effect of well-structured tasks on students' motivation is attributed to students' accuracy in defining the learning task. Future studies should examine more explicitly the interaction between task structure, task definition, and motivation.

#### **Examining the multifaceted nature of student engagement in online mathematics homework**

**Presenting Author:**Elissavet Papageorgiou, Delft University of Technology, Netherlands; **Co-Author:**Jacqueline Wong, Utrecht University, Netherlands; **Co-Author:**Annoesjka Cabo, Delft University of Technology, Netherlands

Abstract As technology becomes an integral part of education, completing homework in an online environment is increasingly common. The online homework environment offers substantial opportunities to examine student engagement using learning analytics and data mining techniques. Recent literature emphasizes the importance of analysing micro-processes for exploring how differences in engagement are associated with learning outcomes. Due to the challenge of identifying which data correspond to meaningful engagement processes, the triangulation with self-reports is considered critical for developing an effective assessment method. This study integrates a data-driven approach of mining behavioural patterns with a theory-driven approach of using self-reports on multidimensional student engagement in online mathematics homework. By using this approach, we aim to investigate whether different engagement processes can be detected during homework exercises. Engagement data from engineering students enrolled in a mathematics course will be analysed using different approaches. First, we use process mining to explore whether different sequences from students' actions can be detected from log data. Second, we examine whether distinct engagement profiles can be identified from self-reports. Finally, we examine whether the sequences differ across the various engagement profiles. Implications regarding theoretical, methodological, and practical considerations are discussed.

#### **Session A 2**

20 August 2023 11:00 - 12:30

UOM\_A11

Single Paper

Higher Education

#### **Motivation and Achievement in Higher Education**

**Keywords:** Achievement, Bullying, E-learning/ Online Learning, Emotion and Affect, Feedback, Goal Orientations, Higher Education, Interest, Morality and Moral Development, Motivation, Peer Interaction, Quantitative Methods

**Interest group:** SIG 04 - Higher Education, SIG 08 - Motivation and Emotion

**Chairperson:** Tessa Consoli, University of Zurich, Institute of Education, Switzerland

#### **Relevance of motivation for use of feedback: Role of goals, self-efficacy, task value, and attitudes**

**Keywords:** Feedback, Goal Orientations, Higher Education, Motivation

**Presenting Author:**Melanie V. Keller, University of Augsburg, Germany; **Co-Author:**Markus Dresel, University of Augsburg, Germany; **Co-Author:**Martin Daumiller, University of Augsburg, Germany

There is an abundance of theoretical and empirical work that illustrates the relevance of feedback for learning and achievement. However, feedback can only exert its positive effect if learners use it appropriately. As such, an important but still little understood question is which aspects on the learners' side influence the perception and use of feedback. Especially motivational aspects could play an important role in that regard. From a theoretical perspective, both achievement goals and self-efficacy are relevant for how students perceive and use feedback. Both could matter for feedback use directly or by influencing other aspects as task value or attitudes that in turn have an impact on feedback use. To investigate the interplay between motivational aspects and feedback use, we conducted a field study with 162 students who received tutor feedback on weekly written assignments in order to revise them. We assessed achievement goals at the semester start and self-efficacy, task value, and attitudes when receiving the feedback. Then, we asked students about their intentions for implementing the feedback and their feedback use and we assessed the use of feedback objectively via computer-based comparisons. Structural equation modeling showed that achievement goals were associated with feedback use both directly and indirectly through attitudes. Self-efficacy also had an impact on attitudes, but not on feedback use. While task value was predicted both by self-efficacy and achievement goals, it was not associated with feedback use. Taken together, these results illustrate that motivational aspects matter for how students make use of feedback.

#### **The moral dimension of university students' behavioural intentions towards social exclusion**

**Keywords:** Bullying, Higher Education, Morality and Moral Development, Peer Interaction

**Presenting Author:**Mareike Brehmer, University of Agder, Norway; **Co-Author:**Jennifer Meyer, Leibniz Institute for Science and Mathematics Education, Germany

Social exclusion from group activities is a prevalent issue among students in higher education and poses challenges to a safe and inclusive learning environment. In the present study, we investigate to what extent the Theory of Planned Behaviour may predict university students' behavioural intentions towards in-person peer social exclusion. The Theory of Planned Behaviour assumes that a person's attitudes towards a behaviour, their subjective norms deriving from significant others, and their perceived behavioural control predict their intention to execute the behaviour in question. Furthermore, moral norms, moral sensitivity and moral disengagement are assumed to predict various behavioural intentions over and above these standard predictor variables. We analysed data collected online from  $N=420$  undergraduate students to examine to what extent attitudes, subjective norms, perceived behavioural control, moral norms, moral disengagement, and moral sensitivity towards bullying predicted various prosocial and antisocial behavioural intentions towards peer social exclusion in university students. Preliminary findings suggest that among the standard variables proposed by the Theory of Planned Behaviour, perceived behavioural control and cognitive attitudes were those with the most significant effects on the outcome variables. Furthermore, especially moral disengagement, but also moral norms and moral sensitivity significantly contributed to the prediction of both prosocial and antisocial behavioural intentions.

#### **Role of Course Design and Emotions in Dropout Behavior: Flipped Classroom versus Traditional Course**

**Keywords:** E-learning/ Online Learning, Emotion and Affect, Higher Education, Quantitative Methods

**Presenting Author:**Theresa Bauer, Technical University of Munich, Germany; **Co-Author:**Manuel Förster, Technical University of Munich, Germany; **Co-Author:**Andreas Maur, Johannes Gutenberg-Universität Mainz, Germany

Higher education has been partially converted from face-to-face to online – in some cases even before the COVID-19 pandemic. In this context student's dropout rates in Germany and internationally are rising. This study compares emotions in the flipped classroom with those in face-to-face courses longitudinally, while also factoring in the effect on course dropout. This study is situated in the context of statistics; and those courses are often associated with negative emotions. This study aims to show the relationship between course design, emotions, and course dropout: To what extent does course design affect students' emotions? How are emotions and dropout related? Two longitudinal surveys over two semesters were conducted with 1.503 students to investigate which emotions have an impact on course dropout in traditional courses compared to flipped classroom. A path model is used to test all hypotheses simultaneously. The results illustrate that emotions have predictive value with regard to students' dropout behavior and can be influenced by course design significantly. Students in the flipped classroom exhibit significantly more positive emotions; are less bored and hopeless, exhibit higher enjoyment and greater hope. All emotions outside the class have a significant effect on dropout, emotions within the class do not. Higher levels of enjoyment and hope in home learning reduce the likelihood of course dropout, while hopelessness and boredom increase it. Controlling for all variables, students in the flipped classroom are less likely to drop out. It can be stated, that emotions can have predictive value regarding students' dropout behavior.

#### **Identity and vocational interests as predictors of academic success in higher education**

**Keywords:** Achievement, Higher Education, Interest, Quantitative Methods

**Presenting Author:**Nicky de Vries, Vrije Universiteit Amsterdam, Netherlands; **Co-Author:**Martijn Meeter, Vrije Universiteit Amsterdam, Netherlands; **Co-Author:**Brenda Jansen, University of Amsterdam, Netherlands; **Co-Author:**Mariette Huizinga, Vrije Universiteit Amsterdam, Netherlands

Choosing a course of study is probably one of the most important academic decisions a student will make. Making a well-informed choice, however, is a complicated process. There is an abundance of study topics to choose from, but students often lack the tools to guide their decision. The concepts of identity formation and vocational interests have often been related to making a study choice. However, no study so far has examined identity formation together with vocational interest congruence in (prospective) students in higher education. This study investigated the relationship between identity profiles, interest congruence, and academic success in two samples of prospective and first year university students ( $N_1 = 2275$ ;  $N_2 = 2728$ ). We used latent profile analysis (LPA) to examine the separate and combined effects. The results and implications of this study will be discussed vis-à-vis the literature on identity formation and vocational interest.

#### **Session A 3**

20 August 2023 11:00 - 12:30

UOM\_A05

Single Paper

Teaching and Teacher Education

#### **Pre-service Teachers' Professional Development**

**Keywords:** Burnout, Competencies, Digital Literacy and Learning, Emotion and Affect, Higher Education, Inquiry Learning, Lifelong Learning, Pre-service Teachers, Problem-based Learning, Qualitative Methods, Teacher Professional Development, Vocational Education and Apprenticeship Training

**Interest group:** SIG 11 - Teaching and Teacher Education, SIG 20 - Inquiry Learning

**Chairperson:** Anastasia Mavridou, Greece

#### **Technological Pedagogical Content Framework for the vocational teacher education in Germany**

**Keywords:** Digital Literacy and Learning, Higher Education, Teacher Professional Development, Vocational Education and Apprenticeship Training

**Presenting Author:**Niklas Sängler, Universität Paderborn, Germany

A model often used internationally as a framework to conceptualize digital competencies for teachers is the TPACK model by Koehler et al. (2013). However, studies rarely critically reflect on the conceptualization and the sources of the knowledge represented by this model which – at its core – builds on the ideas of Shulman (1986; 1987). For the vocational teacher education in Germany, however, this critical reflection is important. Even if it is frequently cited, we argue that TPACK is not capable of fully representing the specific nature of vocational education and training (VET). In this paper, we firstly point out why TPACK in its original form can only serve as a competence framework for vocational teacher education in Germany to a limited extent from a theoretical point of view. We secondly discuss a conceptual adaptation of TPACK which addresses the specific nature of VET in Germany. Thirdly, we present empirical data which indicates an argument for the conceptual adaptation of TPACK for the vocational teacher education.

#### **Complex requirement situations - learning opportunities for student teachers**

**Keywords:** Competencies, Lifelong Learning, Problem-based Learning, Teacher Professional Development

**Presenting Author:**Liana Pirovino, Pädagogische Hochschule Zürich, Switzerland; **Co-Author:**Annelies Kreis, University of Teacher Education Lucerne (PH Luzern), Switzerland

A student teacher is confronted with resistant pupils in the classroom. His routines and experiential knowledge are not sufficient to deal with the situation directly, he feels overwhelmed and unable to address the issue. After the lesson, he reflects on what he could have done differently. With Helsper (2018, 2020) and his remarks on the four areas of tension and the obligation to legitimize, I assume that such Complex Requirement Situations (CRS) offer learning opportunities in the professional practice training of student teachers. The aim is to show how CRS can be characterized from the perspective of experts in school-based teacher education and extent to which learning takes place from them. The role of educators and reflection seem crucial in learning support (Reusser, 2005; Schön, 1987). In the transdisciplinary project EdgeLab (Kreis & Pehlke-Milde, 2020), experts of school-based teacher education were questioned in guided interviews about complex situations for student teachers and about learning support. The interviews were analysed deductively according to Kuckartz (2022) and on the basis of specific theories and models (Keller-Schneider & Hericks, 2014; Collins, 2006; Kunter & Baumert, 2006). Initial results show that different types of complex requirement situations can be identified. Furthermore, CRS seem to be pivotal for the development of competence (Weinert, 2001) and professional development (Terhart, 2011) of student teachers. However, specific forms of learning support are needed to stimulate learning

from complex requirement situations.

#### **Emotional experience and emotion regulation of teacher training students – a diary study**

**Keywords:** Burnout, Emotion and Affect, Pre-service Teachers, Vocational Education and Apprenticeship Training

**Presenting Author:** Alexander Will, University of Paderborn, Germany

Previous emotion research has focused on in-service teachers (Braun, 2017). However, in comparison, there are rather few research reports on the topic of emotions and emotion regulation (Kordts-Freudinger et al., 2017) of future teachers, especially for the German-speaking countries (Arnold et al., 2011). Thus, research on student teachers' emotions in the context of school internships represents a research desideratum (Hascher, 2012). Emotional experience and dealing with emotions are particularly relevant in the practical phases of teacher training. The practical semester, which takes place in the first phase of teacher training in Germany, is a highly emotionally charged phase. A lack of competence in dealing with emotions can have negative consequences, especially at the beginning of the teaching career, both directly (stress experience) and in relation to future development (burnout, etc.). The following diary study addresses this desideratum and deals with emotion-triggering situations, experienced emotions, and applied emotion regulation strategies of teacher training students ( $n = 10$ ) in the practical semester.

#### **How pre-service teachers change views of inquiry after participating in an inquiry-based practicum**

**Keywords:** Inquiry Learning, Pre-service Teachers, Qualitative Methods, Teacher Professional Development

**Presenting Author:** Natalia Contreras, Universitat Ramon Llull, Spain; **Co-Author:** Eva Liesa, Ramon Llull University, Spain; **Co-Author:** Mireia Giralt-Romeu, Universitat Autònoma de Barcelona, Spain

There is a large body of research into how to promote inquiry-based working during initial teacher education. Some studies refer to the importance of developing an inquiry-based teaching internship that combines theory and practice under supervision of the university and school-based teacher-mentors. This study explores how pre-service teachers represented themselves engaging in different forms of inquiry-based working, both before and after participating in an inquiry-based practicum program. In addition, to determine the specific kinds of key learning experiences (KLEs) that promoted changes in their identities as future teachers. A survey and a semi-structured interview were conducted. It was found that the most often represented form of inquiry-based working was systematic reflection. Furthermore, pre-service teachers' mentions of inquiry forms increased in frequency after the inquiry-based practicum, especially when it came to systematic reflection on their own practice. The main KLEs explaining these changes were the activities related to context analysis, university-based seminars, and the support of faculty supervisors and cooperating teachers during the inquiry-based practicum. Thus, we were able to show that an inquiry-based practicum program can change how pre-service teachers conceive of and represent the teaching profession. The findings also underline the need for collaboration between universities and schools. Consequently, this study supports the need to review current training practices for pre-service teachers and to implement inquiry-based teaching internship programs in pre-service teacher education in order to help future teachers develop an inquiry-based professional identity. Finally, the study offers guidance on which learning activities should be reinforced during the practicum.

#### **Session A 4**

20 August 2023 11:00 - 12:30

UOM\_A09

Single Paper

Cognitive Science, Learning and Social Interaction, Teaching and Teacher Education

#### **Teaching in Secondary Education**

**Keywords:** Cooperative/Collaborative Learning, Critical Thinking, Educational Neuroscience, Engagement, Foreign and Second Language Acquisition, In-service Teachers, Qualitative Methods, Science Education, Secondary Education, Social Aspects of Learning and Teaching, Teaching Approaches

**Interest group:** SIG 11 - Teaching and Teacher Education, SIG 18 - Educational Effectiveness and Improvement, SIG 22 - Neuroscience and Education

**Chairperson:** David Zamorano, Universidad de Deusto, Spain

#### **A comparative study of secondary school teachers' conceptions of learning processes in China and UK**

**Keywords:** Educational Neuroscience, Qualitative Methods, Secondary Education, Teaching Approaches

**Presenting Author:** Xibei Jia, University of Bristol, United Kingdom

This research aims to contribute to learning and teaching in the classroom by exploring teachers' conceptions of learning processes in the UK and China – two countries with very different cultures. Although previous research has highlighted the significance of teachers' conceptions of learning in education, there have been limited studies investigating teachers' thoughts on how learning occurs in the classroom. Additionally, while neuroscience and psychology have provided numerous insights into how learning occurs, the relation between scientists' and educators' perceptions remains unexplored. Therefore, the current research asked what similarities and differences exist between teachers' conceptions of learning in UK and Chinese samples, and how perspectives on learning in these two samples compare with current scientific understanding of learning processes. Mixed methods were used to address these research questions within a 3-stage study design. In study one, semi-structured interviews were conducted to collect data exploring teachers' explanations of employing different strategies in class and how they considered these promoted students' learning. Thematic analysis revealed differences in perspectives about learning processes, with an individualistic approach amongst UK teachers compared with Chinese teachers. It is discussed how these culturally diverse approaches might be considered, in scientific terms, to foster learning within each cultural context. For the next stage of the study, outcomes of this analysis will be used to generate a questionnaire allowing quantitative comparison of teachers' learning conceptions in China and the UK – and their relation to scientific understanding.

#### **How debating in English is perceived by Japanese EFL teachers and students.**

**Keywords:** Critical Thinking, Foreign and Second Language Acquisition, In-service Teachers, Secondary Education

**Presenting Author:** Yukari Abe, Kyoto University, Japan; **Co-Author:** Emmanuel Manalo, Kyoto University, Japan

Critical thinking and communication skills are considered essential for thriving in the 21<sup>st</sup> century. In the domain of English language teaching, debate activity is deemed effective to foster both of those skills for better communication in the target language. Thus, the national curriculum guideline of Japan officially refers to debate across subjects, but classroom debate remains unpopular in Japanese schools. Motivated by the gap, the current study attempted to understand the perceptions of Japanese secondary teachers of English and students regarding debating in English. The total of 121 participants included: teachers with ( $n = 43$ ) and without ( $n = 34$ ) debate coaching experience, and students with debate experience ( $n = 44$ ). The current study adopted a mixed method approach: a questionnaire survey and individual interviews. The survey asked the participants to respond to questions about their beliefs about the impact of debating on English skills, as well as aspects other than English (e.g., critical thinking), and their impressions of debate (e.g., whether debating fits Japanese students). Twenty out of the questionnaire respondents volunteered for the interviews to elaborate on their beliefs. The survey results indicated generally favourable responses towards English debate, yet different characteristics of the participant groups resulted in some significant differences. The interviews revealed hidden, perceived hindrances to classroom debate and apparent misconceptions of critical thinking and debating. The overall results suggested the need for practical training for teachers to ease their anxiety over perceived "aggressiveness" caused by argumentation and address those misconceptions.

#### **Science Teachers Experiences, Self-Efficacy, and Attitudes towards Nature of Science education**

**Keywords:** In-service Teachers, Qualitative Methods, Science Education, Secondary Education

**Presenting Author:** Lotte Boven, University of Antwerp, Belgium; **Co-Author:** Peter Van Petegem, University of Antwerp, Belgium; **Co-Author:** Rianne Pinxten, University of Antwerp, Belgium; **Co-Author:** Jelle De Schrijver, Antwerp University & Odisee university college, Belgium

Understanding the nature of science (NOS) is a key element in achieving science literacy for high school students. NOS typically refers to the epistemology of science or the values and beliefs inherent to the development of scientific knowledge (Lederman, 1992). Science teachers play an influential role in facilitating NOS. Several studies have tackled the relationship between teachers' NOS conceptions and their classroom practice, but a lot of the experiential knowledge of

science teachers remains tacit. Our study focuses on making this tacit knowledge of NOS teaching approaches explicit, and we explore the relationship between these teaching approaches and teachers' NOS conceptions. A total of eight science teachers from different Flemish high schools participated in the study. Self-reported semi-structured interviews allowed us to examine teachers' NOS conceptions and their experiences with NOS teaching approaches. The interviews revealed two common teaching approaches 'History of Science' and 'Inquiry activities'. The majority of participants showed an interest in NOS education but, surprisingly, the NOS conceptions of these science teachers did not reflect their self-reported teaching approaches. Together these results provide helpful insights into the current NOS education field in Flanders. Practical implications, barriers, and opportunities for NOS education are discussed.

#### **In Search for Significance: A Change Laboratory Intervention with Adolescent Students**

**Keywords:** Cooperative/Collaborative Learning, Engagement, Secondary Education, Social Aspects of Learning and Teaching

**Presenting Author:**Pauliina Rantavuori, Tampere University, Finland; **Co-Author:**Yrjö Engeström, University of Helsinki, Finland

School is the place where adolescent students spend most of their time. However, interest in schooling decreases the longer students are in school. Listening to children and adolescents is an opportunity to develop teaching and school activities. In this study, the focus is on school development based on adolescents' own initiatives and topics they find significant. This was accomplished with the help of the Change Laboratory (CL) intervention method. The CL is a method for participatory analysis and design based on cultural-historical activity theory and the theory of expansive learning. A group of 8th-grade adolescent students voluntarily constructed and implemented 11 projects they found significant for their own lives and futures. The two CL interventions were carried out in two comprehensive schools in Finland during the school years 2020-21 and 2021-22. CL meetings were held during school hours. We examine how the CL processes and its outcomes were experienced and reflected on by the adolescents, school staff, and external experts. The data consists of recordings of CL meetings, final interviews, and public closing events. The data is analyzed by a thematic analysis method. Participants in this study brought up several important themes that could be linked to teaching and learning and used for school development. The results of this study indicate that we should pay more attention to actual practitioners in school: to students themselves and listen to their voices.

#### **Session A 5**

20 August 2023 11:00 - 12:30

UOM\_A06

Single Paper

Instructional Design, Motivational, Social and Affective Processes

#### **Achievement in Mathematics and Numeracy**

**Keywords:** Achievement, Anxiety and Stress, Cognitive Skills and Processes, Instructional Design, Large-scale Assessment, Mathematics/Numeracy, Motivation, Primary Education

**Interest group:** SIG 06 - Instructional Design, SIG 08 - Motivation and Emotion

**Chairperson:** Helene Uppin, Tallinn University, Estonia

#### **Interleaved practice in elementary school mathematics and the role of prior knowledge and NFC**

**Keywords:** Achievement, Instructional Design, Mathematics/Numeracy, Primary Education

**Presenting Author:**Lea Nemeth, University of Kassel, Institute of Educational Science, Germany; **Co-Author:**Frank Lipowsky, University of Kassel, Germany

Primary school students rarely use subtraction strategies adaptively. Interleaved practice can foster students' adaptive strategy use. However, it has not been investigated yet whether all students benefit equally from this teaching approach. While interleaving subtraction tasks prompts students' attention to the different task characteristics triggering the use of specific subtraction strategies, blocked practice does not support students in detecting these central differences. Thus, low prior knowledge students should rather benefit from interleaving than blocking as it guides them through the learning relevant comparison processes. As these comparison processes are cognitively demanding, students' need for cognition (NFC) could moderate the effect. The present study investigates the role of students' prior knowledge and NFC for the effectiveness of interleaved and blocked practice. 236 German third graders were randomly assigned to an interleaved or blocked condition. Both groups were taught to use four number-based strategies and the written algorithm for solving subtraction problems within 14 lessons. A quadratic growth curve model showed that prior knowledge has a positive influence on students' development of adaptivity in the blocked but not in the interleaved condition. Students' NFC has a positive impact on interleaved practice, while it has no influence in the blocked condition.

#### **Not Adding It Up: Grade 1 mathematics outcomes in two South African provinces**

**Keywords:** Achievement, Large-scale Assessment, Mathematics/Numeracy, Primary Education

**Presenting Author:**Irene Pampallis, University of the Witwatersrand, South Africa; **Co-Author:**Nic Spaull, Stellenbosch University, South Africa; **Co-Author:**Cally Ardington, University of Cape Town, South Africa; **Co-Author:**Ingrid Sapire, University of the Witwatersrand, South Africa; **Co-Author:**Permie Isaac, Funda Wande, South Africa

Although improving school mathematics has long been a policy priority in South Africa, learning outcomes remain low. Given the cumulative nature of mathematics, it is likely that learning deficits have their origins in the early grades. However, no reliable large-scale studies have yet assessed the mathematics knowledge of South African students younger than Grade 3. This paper begins to fill in this gap by reporting findings from two large studies of Grade 1 students. A total of 3,264 students from 57 schools in the Eastern Cape province and 120 schools in Limpopo province completed Early Grade Mathematics Assessments, testing various components of early numeracy. The test questions were classified using Fritz et al.'s (2020) 5-level model of numerical conceptual development. The results showed poor conceptual understanding overall. Very few learners (30% from the Eastern Cape sample and 27% from the Limpopo sample) had reached Level 3 (an understanding that numbers can be decomposed into smaller units), which is the basis for over 70% of the Grade 1 curriculum. This means that the bulk of the curriculum is not accessible to most children. It was also found that most participants had low computational fluency with addition and subtraction. Taken together, these results suggest that the faultlines in South African mathematics education are firmly in place before the end of Grade 1. The practical implications are clear: resources should be channelled towards developing early grade mathematics, and curricular reform should be considered to develop learners' number concept from a more basic level.

#### **Mathematics anxiety hinders the retention of fraction arithmetic knowledge**

**Keywords:** Achievement, Anxiety and Stress, Mathematics/Numeracy, Primary Education

**Presenting Author:**Hilma Halme, University of Turku, Department of Teacher Education, Finland; **Co-Author:**Minna Hannula-Sormunen, University of Turku, Finland; **Co-Author:**Jake McMullen, University of Turku, Finland

Fraction arithmetic knowledge is difficult for students to grasp. One factor that could be hindering students' fraction arithmetic development already in primary school is mathematics anxiety. Recent research has shown that mathematics anxiety is negatively related to fraction arithmetic knowledge in primary school, but there is no previous research on the developmental relations. The current study examined the role of mathematics anxiety in the development of fraction arithmetic performance in 292 primary school students over three time points within a school year. The students had fraction teaching between time points 1 and 2. The results show that fraction performance increases from time point 1 to time point 2 and decreases from time point 2 to time point 3. Mathematics anxiety did not significantly predict fraction arithmetic performance at time point 2 (i.e. after teaching), when controlling for prior fraction arithmetic performance. However, higher mathematics anxiety significantly predicted lower retention of fraction performance from time point 2 to time point 3. Overall, fraction anxiety hinders the development of fraction performance. Furthermore, the different influences mathematics anxiety has on fraction arithmetic learning and retention processes has implications for the teaching of fractions and mathematics in general.

#### **Self-downing Beliefs, Coping Strategies and Math Performance: a Rational Emotive Education approach**

**Keywords:** Achievement, Cognitive Skills and Processes, Mathematics/Numeracy, Motivation

**Presenting Author:**Alexandra Katsiki, National & Kapodestrian University of Athens, Greece; **Co-Author:**Alexander Minnaert, University of Groningen,

Netherlands

Rational Emotive Behavior Theory has repeatedly stressed that children's irrational beliefs have a negative impact on their academic success. Hence, the current study sought to explore the relationship between students' self-downing beliefs and their academic math performance. Secondly, a possible mediation and/or interaction was examined between coping strategies and self-downing beliefs for the prediction of academic math performance. Thirdly possible gender differences were explored between the relationships of the aforementioned variables. One hundred sixteen adolescent students completed self-report questionnaires, assessing their self-downing beliefs and coping strategies. Students' scores of mathematical tests were gathered from school records. A curvilinear regression analysis showed that students' self-downing beliefs significantly predict their academic math performance through a curvilinear relationship. A stepwise multiple regression analysis also showed that self-downing is the most significant predictor of academic math performance, while the addition of avoidance coping on top of self-downing, was marginally significant for the prediction of academic math performance. Furthermore, the inclusion of interaction terms into the stepwise multiple regression indicated non-significant interaction effects between positive approach coping and self-downing beliefs and between avoidance coping and self-downing beliefs, for the prediction of academic math performance. Last but not least non-significant gender differences were found between the variables of the study, with the exemption of avoidance coping, in 'favor' of boys. Overall, the results are in line with the REBT theory that students' irrational beliefs may substantially contribute to their academic achievement.

#### Session A 6

20 August 2023 11:00 - 12:30

UOM\_R02

Poster Presentation

Higher Education, Learning and Social Interaction, Lifelong Learning, Teaching and Teacher Education

#### Teachers' Professional Development

**Keywords:** Attitudes and Beliefs, Citizenship Education, Competencies, Conceptual Change, Cooperative/Collaborative Learning, Dialogic Pedagogy, Higher Education, In-service Teachers, Large-scale Assessment, Lifelong Learning, Mentoring and Coaching, Mixed-method Research, Qualitative Methods, Quantitative Methods, Reasoning, Social Aspects of Learning and Teaching, Social Sciences and Humanities, Teacher Effectiveness, Teacher Professional Development, Teaching Approaches, Tool Development

**Interest group:** SIG 04 - Higher Education, SIG 11 - Teaching and Teacher Education, SIG 14 - Learning and Professional Development, SIG 18 - Educational Effectiveness and Improvement, SIG 26 - Argumentation, Dialogue and Reasoning

**Chairperson:** Rebecca Kreutz, Universität zu Köln/ University of Cologne, Germany

#### Effects of a short online pedagogical course on university teachers' pedagogical development

**Keywords:** Conceptual Change, Higher Education, Quantitative Methods, Teacher Professional Development

**Presenting Author:** Trang Nguyen, University of Turku / Faculty of Education, Finland; **Co-Author:** Henna Vilppu, University of Turku, Finland; **Co-Author:** Ilona Södervik, University of Helsinki, Finland; **Co-Author:** Mari Murtonen, University of Turku, Finland

The pedagogical expertise of university teachers is one of the central concerns of the goal to improve the quality of teaching and learning in higher education. Courses in pedagogy have been an efficient tool to enhance teachers' pedagogical expertise by improving their understanding of conceptions of teaching and learning. Consequently, the improvement in pedagogical expertise is expected to foster the active learning of students. The aim of this study was to examine the effect of a short online pedagogical training course on the development of teachers' conceptions of active learning from two perspectives: the role of prior knowledge and engaging their students during lectures. The effect of the training was measured through self-report questionnaires of university teachers before and after the pedagogical course (N=108). The results showed an increase in the teachers' perceptions of the importance of prior knowledge in the learning and the awareness of developing engaging lectures after participants completed the training course. The outcomes indicate the benefits of short pedagogical courses for their pedagogical development, especially for academics who have not had any prior studies on pedagogy. Thus, short digital pedagogical training courses can be an effective and efficient solution for providing fundamental knowledge of pedagogy for university teachers.

#### Factors Influencing Primary School Teachers' Attitudes Towards Evidence-Based Teaching

**Keywords:** Attitudes and Beliefs, In-service Teachers, Quantitative Methods, Teacher Professional Development

**Presenting Author:** María Rodríguez Alcolea, Utrecht University, Spain; **Co-Author:** Despoina Georgiou, Utrecht University, Netherlands

In the last decades, there have been national and international attempts all over Europe to support teachers' decision-making processes, which are currently based on peer learning, and encourage the use of the newest available research evidence. For teachers to implement evidence-based teaching (EBT) practices, it is crucial that they possess positive attitudes toward research. However, little attention has been paid to primary school teachers' research attitudes and the factors that might affect them. This study explores the extent to which primary school teachers' personal characteristics (age, years of teaching experience, and prior education) and information literacy skills (ILS) relate to their attitudes toward evidence implementation into teaching practice. Quantitative data were collected from  $N = 120$  primary school teachers. Correlation, comparison, and multiple regression analyses were conducted. The correlation analyses revealed that the younger, less experienced, and more information-literate teachers are, the more positive attitudes they possess. Teachers' attitudes did not significantly differ based on their prior education. Information literacy skills significantly predicted primary school teachers' positive attitudes toward research. The results along with the complex relationships between the variables under investigation will be discussed considering literature from medical education, where EBT has its roots, and the Bologna Process, which encouraged educational research in the Teaching Education bachelor's degree. Implications and future steps are also discussed. **Keywords:** Evidence-based teaching practice, primary school teachers, personal characteristics, information literacy skills, professional development.

#### The Power of Time (in implementation)

**Keywords:** Cooperative/Collaborative Learning, Social Aspects of Learning and Teaching, Teacher Professional Development, Teaching Approaches

**Presenting Author:** Lisa Fohlin, Stockholm University, Sweden

This study investigated time as a factor of implementation. The implementation in focus was a six-month implementation project of a new didactic practice (theme-based cooperative learning) in two kindergarten classrooms in one Swedish school during the spring of 2021. The six kindergarten teachers participated in group interviews before, during, and after the implementation project. The Theoretical Domains Framework (Atkins et al., 2017) guided deductive sorting of the expressed barriers and facilitators at each time-point into domains and sub-categories. Analysis of the change of expressions at the different time-points found time to be an important factor for the implementation project. Time acted primarily as a facilitator, giving both teachers, students, and the school as a whole time to ease into the change in practice. The downside of time was that it enabled change in many ways, with teachers leaving for other schools or receiving new curriculum guidelines. The study highlights the importance of considering the factor of time in implementation projects, with time being necessary for change, constantly changing conditions for actions, and persistently perceived as being insufficient by teachers.

#### Mentoring among university teachers: on the way to pedagogically productive talk

**Keywords:** Higher Education, Mentoring and Coaching, Qualitative Methods, Teacher Professional Development

**Presenting Author:** Barbora Nekardova, Masaryk University Department of Educational Sciences, Czech Republic

This paper examines the mentoring conversations among university teachers and shows how the concept of pedagogically productive talk is used in these conversations. Pedagogically productive talk is teacher collaborative discourse that combines six principles, which assumed to socialize teachers into productive ways of talking and thinking about practice, dispositions to reflect on and improve practice, and a commitment to student learning and teaching excellence (Lefstein et al., 2020). The quality of teacher education is perceived as an important factor influencing the quality of teaching and student outcomes (Hattie, 2009; MacPhail, Ulvik, Guberman, Czerniawski, Oolbekink-Marchand & Bain, 2018). Improving teachers' pedagogical competencies plays a key role,

especially in improving the quality of teaching and learning at universities (Kaynarđ, 2017). This tendency is now also confirmed by Masaryk University. One of the tools it uses for this purpose is the development of the pedagogical competencies. For this reason, the program Development of Pedagogical Competences is established. The mentioned program consists of a total of four parts (Masaryk University, 2022). The last part of the program is focused on the cooperation of participants (university teacher) with a mentor, engaging in various activities such as joint discussions, joint teaching and the like. Studies have repeatedly shown that mentoring plays an important role in the pedagogical development of university teachers; however, we do not have much information about the discourse of the mentoring conversation among university teachers, which I address in the Czech environment in the program Development of Pedagogical Competences.

#### **Self-study of a facilitator of a professional development program on dialogic teaching**

**Keywords:** Dialogic Pedagogy, In-service Teachers, Qualitative Methods, Teacher Professional Development

**Presenting Author:**Marisol Gómez, Universidad Alberto Hurtado, Chile; **Co-Author:**MARIBEL CALDERON, Universidad Católica Silva Henríquez, Chile

In the field of dialogic pedagogy, various professional development programs have emerged, including strategies such as the use of videos, the delivery of materials, mentoring, among others. However, one aspect that seems not yet to be investigated in depth is the quality of the relationship established between the facilitators of the programs and the participating teachers, which may be a relevant dimension for the effectiveness of these programs. Through the use of self-study methodology, this study aims to investigate this relationship -between facilitators and teachers- of workshops held in 2022 with the purpose of improving the facilitation practice in future workshops for teachers on the subject of dialogic teaching in Santiago de Chile in 2023. The first results of this process show that it is essential that the facilitator has a position willing to deepen his difference of opinion with the participating teachers, using a dialogue that precisely models in this case what is proposed for dialogic teaching.

#### **The impact of European programmes on the professional development of teachers in Greece**

**Keywords:** Citizenship Education, Competencies, Teacher Effectiveness, Teacher Professional Development

**Presenting Author:**Theodoros Zevgitis, University of Ioannina, Greece; **Co-Author:**Anastassios Emvalotis, University of Ioannina, Greece

The present study attempts to evaluate the European school partnerships on the aspect of the impact that they have on the professional development of teachers in primary and secondary education. Furthermore, this study examines if teachers' views differ according to a range of factors. To achieve this the study analyzed the total number of the final reports that schools submitted to the National Agency in the period 2008-2013. The data was supplemented by an online survey in which teachers with experience in European school partnerships took part. Most of the teachers believe that participation in European partnerships responds well to the needs and challenges faced by teachers in everyday school life. However, the participants expressed their concerns regarding the increased amount of work that they had to do during the implementation of the project. The impact of the European programmes on strengthening the European citizenship of the participants stands out, thus contributing to the transformation of teachers into active European citizens and the promotion of common European values. However, as far as the impact of enhancing the participants' skills is concerned, the qualitative analysis of the data reveals that it was the self-confidence of the participants that was actually strengthened. Finally, the analysis revealed statistically significant differences between teachers that had the role of the contact person and the rest of the teachers. Moreover, the experience that teachers have in EU programmes seems to affect their opinion on the impact of school partnerships on teachers' professional development.

#### **Teachers' professional growth in teaching social scientific reasoning**

**Keywords:** Citizenship Education, Reasoning, Social Sciences and Humanities, Teacher Professional Development

**Presenting Author:**Thomas Klijnstra, University of Amsterdam, Netherlands; **Co-Author:**Gerhard Stoel, Radboud University, Nijmegen, Netherlands; **Co-Author:**Geerte Savenije, University of Amsterdam, Netherlands; **Co-Author:**Gerard Ruijs, University of Amsterdam, Netherlands; **Co-Author:**Carla Van Boxtel, University of Amsterdam, Netherlands

In social science education, students need to reason about social problems. However, social problems are often complex (e.g., they have multiple causes, consequences, and solutions) and reasoning is challenging. Hence, promoting students' ability to reason about political and social problems is relevant, but complex to teach. This study investigates how the use of educative materials in a professional development program contributes to teachers' professional growth in teaching reasoning skills in social science lessons. Previous research showed that a Teacher Development Program (TDP) can be effective when it is subject-specific and when educational materials are central. We used previous insights on characteristics of effective professionalization activities for the design of the TDP. In this study, ten social science teachers participated. Teachers' professional growth is examined by qualitative data analysis using pre- and post-interviews, a logbook and lesson observations of each teacher, and a questionnaire. The results showed an increment in teachers' knowledge of reasoning skills. Almost all teachers mentioned that the scaffolding of thinking steps in structured assignments and diagrams received more attention in their own lessons because of the TDP. Teachers shifted their focus in their lessons in such a way that they focused more on learning reasoning skills and applying the concepts more deeply by examining them in meaningful contexts. We expect that this will make the subject more meaningful for students and teachers. Teachers and teacher-educators can use these insights in practice. Ultimately, this can increase students' abilities to reason about social problems.

#### **Onboarding measures of cross-entry into the teaching profession of secondary general education**

**Keywords:** Mixed-method Research, Qualitative Methods, Teacher Professional Development, Tool Development

**Presenting Author:**Claudia Weinzettl, PH NÖE, Austria

The purpose of this study is to find out the effective onboarding measures of cross-entry teachers of general secondary education in the school year 22/23. It is highly important that the integration of probationary teachers happens as quickly as possible so that required procedures become standard practice and turn into routines. This study investigated the different needs of career-changers and the beneficial outcomes for schools from the added value the career-changers bring. This research focuses on the question, "Which measures are used in the school system to integrate new colleagues smoothly?" The qualitative study is based on semi-structured individual interviews with about 15 career switchers and documents analyses of their 19 weekly-diaries. Responses suggest that second career-teachers need an individual and specific induction programme that considers their different needs, motivation and knowledge.

#### **Analysis of professional development of teachers (ISCED 2 level) in the Czech Republic**

**Keywords:** Large-scale Assessment, Lifelong Learning, Mixed-method Research, Teacher Professional Development

**Presenting Author:**Kristýna Šejnohová, Institute for Research and Development of Education, Faculty of Education, Charles University in Prague, Czech Republic

The poster introduces the author's research project with the theme of teachers' professional development. A sequential mixed method research is conducted to fulfill the main objective of the project, which is the description and analysis of the teachers' professional development praxis within the ISCED 2 level in the Czech Republic. Firstly, a secondary analysis of the selected data set (TALIS 2013, 2018) will focus on teachers' assessment of professional development, feedback, and school climate based on how many years of work experience the teacher has. The outcomes of the analysis will be implemented in conducting focus groups with teachers. The identification of best practices and critical areas within teachers' professional development experiences is expected.

#### **Understanding University Teachers' Multi-level Learning Designing Process**

**Keywords:** Higher Education, In-service Teachers, Qualitative Methods, Teaching Approaches

**Presenting Author:**Liu liukun, The University of Hong Kong, Hong Kong; **Co-Author:**Nancy Law, University of Hong Kong, Hong Kong; **Co-Author:**Jianhua Zhao, Southern University of Science and Technology, China

Understanding University Teachers' Multi-Level Learning Designing Process Authors Kun Liu Nancy Law Jianhua Zhao Keywords: Learning Design; Design Process; Recently, the field of Learning Design is gaining increasing attention with the objective to support teachers as design professionals, and creating learning environments and learning experiences aligned to pedagogical approaches and learning objectives to improve practice (Mor, Craft & Maina, 2015). While significant efforts have been made to support teachers' design capacity building, there is a gap between research and practice, and little is known about the teachers' existing design process, especially how university teachers go about the design process at different levels and their pedagogical considerations, as a basis for building their design capabilities. This study drew the design language (Law et al., 2017) and four layers of the pedagogical framework (Goodyear,

2015) to help conceptualize the nature of teachers' design practice and guide our design and analysis. A qualitative approach was employed, and 16 participants in-service teachers from different career stages and disciplines from a Chinese university participated in a face-to-face semi-structured interview. Content analysis is employed to analyze the data. This paper presents preliminary findings and described how teachers go about designing a new course, and re-designing a course, through an iterative process at different levels, demonstrating the dynamics of the design and discussing the challenges that teachers encountered at different layers, pedagogical considerations underpinned, and strategies used when making decisions during the design process.

#### Session A 7

20 August 2023 11:00 - 12:30

UOM\_A10

Roundtable

Assessment and Evaluation, Motivational, Social and Affective Processes

##### Best of JURE - Roundtables

**Keywords:** At-risk Students, Classroom Assessment, Early Childhood Education, Emotion and Affect, Metacognition, Mixed-method Research, Motivation, Problem Solving, Qualitative Methods, Reading, Self-determination, Self-regulated Learning and Behaviour

**Interest group:** SIG 05 - Learning and Development in Early Childhood, SIG 08 - Motivation and Emotion, SIG 16 - Metacognition and Self-Regulated Learning

**Chairperson:** Meropi Simou, Aristotle University of Thessaloniki, Greece

##### The influence of enjoyment on self-regulated learning from texts

**Keywords:** Emotion and Affect, Metacognition, Reading, Self-regulated Learning and Behaviour

**Presenting Author:** Celina Safferthal, University of Education Karlsruhe, Germany; **Co-Author:** Anja Prinz-Weiß, University of Education Karlsruhe, Germany

For successful self-regulated learning from texts, learners must accurately judge their comprehension and engage in effective regulation activities. Despite the well-known influence of enjoyment on learning processes and outcomes, little is known with regard to its role for judgment accuracy and regulation. First evidence indicates that higher levels of positive emotions, such as enjoyment or hope, are related to more overconfident judgments, and higher levels of negative emotions, such as anger and hopelessness, to more underconfident judgments. In the present study, we aim at investigating the impact of middle school students' enjoyment on self-regulated learning from texts. The experimental group receives a training to increase enjoyment, whereas the control group receives no training. We expect that increased enjoyment will lead to better comprehension. However, at the same time, we assume that increased enjoyment will lead to greater overconfidence in one's comprehension, which in turn will inhibit regulation activities and prevent further comprehension improvements. These results would indicate that teachers and learners must be sensitized to the circumstance that there is a downside of enjoyment because it can impair self-regulation processes.

##### Enhancing problem-solving skills in preschool through assessment for learning: A field experiment

**Keywords:** Classroom Assessment, Early Childhood Education, Mixed-method Research, Problem Solving

**Presenting Author:** Joris Van Elsen, University of Antwerp, Belgium; **Co-Author:** Sven De Maeyer, Antwerp University, Belgium; **Co-Author:** Joke Torbeyns, KU Leuven, Belgium

Problem solving is an important 21st century skill and should take an important place in preschool education. However, the complexity of problem-solving makes it difficult to teach. Assessment for Learning (AfL) can help teachers gather data and information about their preschoolers' problem-solving skills and select challenging learning activities, adapted to their preschoolers' abilities. Most studies on AfL focus on older students. Studies that focus on the effects of AfL in preschool are limited. In order to investigate the effectiveness of AfL to enhance problem-solving skills in preschool, a stepped wedge cluster randomised trial (SW-CRT) will be set up. To ensure ecological validity, the whole experiment will be conducted by preschool teachers. Based on the assessment, quantitative data on the problem-solving skills of preschoolers will be collected and analysed using Bayesian mixed models in order to investigate the effectiveness of the intervention. The design of this study still presents some challenges on which we would like to have an active discussion. Three main issues will be addressed during this roundtable: (1) how to distinguish between effects of the assessments and effects of the activities teachers deploy based on the data and information they receive from the assessment, (2) how to ensure and investigate treatment fidelity when data collection is carried out by teachers, and (3) how can we keep the workload for the teachers feasible?

##### Low-educated adults' motives for learning: a multilayered self-determination perspective?

**Keywords:** At-risk Students, Motivation, Qualitative Methods, Self-determination

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

Adult secondary education (ASE) provides a second chance for adults who did not finalize secondary education, in order to prepare them for a lifelong learning trajectory. Although good-quality motivation is a pivotal component herein, participation rates in adult education among low-educated adults are low and dropout rates are high. As learning in adult education is voluntary, this study aims to gain a comprehensive understanding of motivational drivers of low-educated adults, and in doing so, to understand from a self-determination perspective both their motivation to participate in ASE and motivation to engage in learning every day. Semi-structured interviews were carried out with a purposive sample of high-level ( $n = 11$ ) and low-level ( $n = 8$ ) autonomously motivated ASE-learners. Both participation and learning motives were mapped by means of thematic analysis and subsequently deductively located on the self-determination continuum in order to capture the qualitative differences in motivational drivers for both types of motives. Multidimensional scaling and cluster analysis were used to explore the relationship between good- and poor-quality participation and learning motives and to identify homogeneous groups of respondents based on their unique combination of both motivation types. This study not only adds to theorization by further unraveling the multilayered concept of motivation in adult education through a self-determination lens, but also contributes to educational practice by distinguishing between good- and poor-quality motivational profiles in this specific learning context.

#### Session A 8

20 August 2023 11:00 - 12:30

UOM\_R05

Roundtable

Higher Education, Motivational, Social and Affective Processes

##### Motivation and Emotion

**Keywords:** At-risk Students, Attitudes and Beliefs, E-learning/ Online Learning, Emotion and Affect, Engagement, Foreign and Second Language Acquisition, Higher Education, Motivation, Quantitative Methods, Secondary Education, Teaching Approaches

**Interest group:** SIG 04 - Higher Education, SIG 08 - Motivation and Emotion

**Chairperson:** Christina Schoina, Aristotle University of Thessaloniki, Greece

##### Students' perfectionism: Gender differences and development in upper secondary education

**Keywords:** At-risk Students, Motivation, Quantitative Methods, Secondary Education

**Presenting Author:** Anna Kuusi, University of Eastern Finland, Finland; **Co-Author:** Heta Tuominen, University of Eastern Finland, Finland; **Co-Author:** Markku Niemivirta, University of Eastern Finland, Finland

Evidence indicates an increase in perfectionistic tendencies, academic pressure and burnout among youth in recent years. Thus, it seems timely to investigate

perfectionism among upper secondary students, a group particularly vulnerable to burnout. Perfectionism is characterised by a combination of two individual tendencies: perfectionistic strivings and concerns. Most studies examine the predictions of perfectionistic tendencies (a dimensional approach) or compare groups with different emphasis on those (a group-based approach). Cross-sectional group-based studies have formed meaningful perfectionistic profiles, which exhibit different patterns of academic and emotional outcomes. However, studies examining perfectionistic profiles among adolescents in the academic context are still scarce. Further, stability of perfectionistic tendencies and profiles, as well as gender differences in them, are surprisingly understudied, especially in Finland. The aim of this study is to investigate 1) stability of perfectionistic dimensions and profiles in upper secondary education, and 2) gender differences in perfectionistic dimensions and profiles. Longitudinal data will be collected from vocational and general upper secondary schools (projected N = 4000). Both variable- and person-oriented approaches and different model-based analyses (LPA, LTA) will be applied. Perfectionistic tendencies affect students' learning and attitude towards studying. We hypothesise that both dimensions and profiles of perfectionism show relatively high stability over time, and that girls have slightly higher perfectionistic strivings and concerns than boys, and girls are overrepresented among perfectionists. It is important to understand which combinations of perfectionistic tendencies are useful or harmful for learning, and how we can support girls and boys in secondary education.

#### **The relationship between L2 anxiety and EFL motivation in online lessons**

**Keywords:** E-learning/ Online Learning, Emotion and Affect, Foreign and Second Language Acquisition, Motivation

**Presenting Author:**Haruka Murakami, Kyoto University, Japan; **Co-Author:**Emmanuel Manalo, Kyoto University, Japan

Motivation and anxiety are generally considered to be essential in foreign language learning. These days, the development of technology and the Covid-19 pandemic has pushed technology use beyond distance education. However, there is still less attention on those aspects in online learning settings. Furthermore, until today, unconscious motivation has been ignored in EFL motivation studies. This research aims to investigate online specific L2 anxiety among Japanese students, and the relationship between anxiety and EFL motivation in online EFL learning both explicitly and implicitly. This study will use Implicit Association Test (IAT) and questionnaires for online L2 anxiety and EFL motivation. The participants will be students who take EFL lessons online at corresponding schools. The expected results are that Japanese EFL students will have higher Internet learning anxiety, Test anxiety and Communicative apprehension in online learning. Furthermore, in some cases, those anxiety may decrease students' motivation. Finally, these results can be happened for both conscious and unconscious motivation. These findings might be helpful for not only teachers working in corresponding schools but teachers at regular schools who are forced to teach on online in this uncertain time.

#### **Networks and dynamics of secondary students' momentary expectancies, values, costs, and engagement**

**Keywords:** Engagement, Motivation, Quantitative Methods, Secondary Education

**Presenting Author:**Kukka-Maaria Polso, University of Helsinki, Finland; **Co-Author:**Heta Tuominen, University of Eastern Finland, Finland; **Co-Author:**Petri Ihanntola, University of Helsinki, Finland; **Co-Author:**Markku Niemivirta, University of Eastern Finland, Finland

While situational expectancies, values, costs, and engagement are shown to be meaningfully associated, research on their variability in different levels and longitudinal associations is still sparse. Furthermore, network analysis has proven a promising tool for examining contextual, individual, and situation-specific differences in the co-occurrence of multiple constructs.

This roundtable presentation will focus on a forthcoming study on general and vocational upper secondary school students' situational motivation and behavioral engagement. The study aims to investigate a) networks of upper secondary school students' in-the-moment behavioral engagement, expectancies, values, and costs, and b) their change and interplay during a demanding phase in studies. Situational data will be gathered from students in the two tracks during autumn 2023 (projected N = 2 x 200) over a two-week period (e.g., exam week, on-the-job learning) using experience sampling methodology.

Variation in the constructs and their networks is expected between the educational tracks and different measurement situations. Significant autoregression from one situation to the next are anticipated at least on expectancies and effort cost. Values and engagement are anticipated to be reciprocally related, and expectancies predicted by engagement.

This work will contribute to the expanding line of situated expectancy-value research by combining motivational and engagement-related constructs, providing holistic views by means of network analyses and a longitudinal design, and comparing students in two somewhat dissimilar educational tracks.

#### **The value of service-learning – its short- and long-term effectiveness on study motivation**

**Keywords:** Attitudes and Beliefs, Higher Education, Motivation, Teaching Approaches

**Presenting Author:**Jonas Breetzke, University of Hamburg, Germany; **Co-Author:**Derya Özbagci, University of Hamburg, Germany; **Co-Author:**Carla Bohndick, University of Hamburg, Germany

Service-learning is an innovative teaching and learning technique that integrates academic learning and community service. Empirical studies have associated service-learning with an increase in educational outcomes, including students' academic achievement and practical skills (Celio et al., 2011). Beyond that, service-learning could be a fruitful approach to increase students' subjective study values, one of the most proximal predictors of study motivation (Eccles & Wigfield, 2020). During their community engagement, students can apply the knowledge gained in their studies to different civic situations (Sevier et al., 2012) and thus, experience the value of their studies first hand. However, research on the relationship between service-learning and subjective study values is lacking. To address this, the present study builds on expectancy-value theory and investigates the short- and long-term effectiveness of service-learning on students' study values using a pre-post follow-up control-group design. We collect longitudinal data on seven service-learning initiatives across four different universities in Germany. Students who participated in service-learning were compared to a control-group who participated in the standard curriculum. We use propensity score matching to ensure similarity between experimental and control group and use ANOVAs to investigate the differences between both groups. Data collection and analyses is currently in progress and will be fully completed in June 2023. Our research can add new insight into the short- and long-term effectiveness of service-learning by investigating outcomes important for both students and their motivation and higher education institutions and their policy (e.g., increase the civic and vocational relevancy of higher education programmes).

#### **Session A 9**

20 August 2023 11:00 - 12:30

UOM\_R01

Poster Presentation

Cognitive Science, Higher Education, Instructional Design, Learning and Instructional Technology

#### **Educational Technologies**

**Keywords:** Achievement, Anxiety and Stress, Comprehension of Text and Graphics, Computational Thinking, Computer-assisted Learning, Cooperative/Collaborative Learning, Digital Literacy and Learning, Educational Technologies, Engagement, Feedback, Goal Orientations, Health-care Education, Higher Education, Instructional Design, Learning Analytics, Metacognition, Motivation, Multimedia Learning, Primary Education, Quantitative Methods, Science and STEM, Self-regulated Learning and Behaviour, Simulation-based Learning, Social Media, Video-based Learning

**Interest group:** SIG 02 - Comprehension of Text and Graphics, SIG 06 - Instructional Design, SIG 07 - Technology-Enhanced Learning And Instruction, SIG 14 - Learning and Professional Development, SIG 16 - Metacognition and Self-Regulated Learning, SIG 28 - Play, Learning and Development

**Chairperson:** Sophia Braumann, University Utrecht, Netherlands

#### **'Who's gonna watch our video?': When students think of the audience in a learning-by-teaching task**

**Keywords:** Cooperative/Collaborative Learning, Educational Technologies, Primary Education, Video-based Learning

**Presenting Author:**Jesús Ribosa, UAB Universitat Autònoma de Barcelona, Spain; **Co-Author:**David Duran Gisbert, Universitat Autònoma de Barcelona, Spain

The role of the audience has been emphasized in student video creation and in the learning-by-teaching framework. This paper focuses on students' perception of potential audience in a learning-by-teaching cooperative learning project, where 22 pairs of sixth-grade students created video-tutorials. The video creation

process is based on the following stages: 1) defining the question, 2) prior knowledge, 3) information searching, 4) outline elaboration, and 5) video production. Data collection and analysis was based on a) students' self-reported perception of the potential audience, and b) personal references in the video-tutorials. Results show that students' self-reported perception is high in all stages of the video creation process, especially in stage 5 (i.e., video production). Pairwise comparisons show significant differences between stage 5 and the other stages, except stage 2. As for personal references in the video-tutorials, results show that from every 100 transcribed words, 2.23 are personal references: 1.73 in the explanation part and 2.91 in the question part. The difference between the two parts is statistically significant. Two main contributions to the field are underlined: a) it seems that the attention to the audience can fluctuate throughout the non-interactive learning-by-teaching situation, and b) comprehension questions for the audience play an important role in students' perception of social presence, likely due to their interactive nature.

#### **Visual perspective taking in primary school robotics: Can embodied learning promote programming?**

**Keywords:** Computational Thinking, Educational Technologies, Primary Education, Science and STEM

**Presenting Author:** Amy Hughes, Cardiff University, United Kingdom; **Co-Author:** Sarah Gerson, Cardiff University, United Kingdom; **Co-Author:** Johanna van Schaik, Radboud University Nijmegen, Netherlands

During the last decade, there has been a strong movement to introduce programming and computational thinking through educational robotics in early childhood education. While our knowledge of the benefits of these technologies continues to expand, it is important to understand potential barriers to learning with these devices. Visual Perspective Taking (VPT) develops throughout early childhood and an inability to understand perspective taking processes may result in difficulties when programming a mobile object (i.e., a robot). This study aimed to investigate the role of VPT when programming a robot and whether embodied learning helps overcome this effect. So far, 39 children aged 4 to 7 years participated in this study. Each child was randomly assigned to one of three programming conditions: (1) Incongruent perspective (i.e., participant's and the robot's visual perspectives differed), (2) Congruent perspective (i.e., participant and robot perspectives aligned), or (3) Embodied programming (i.e., participants physically moved through the space whilst programming the device). Participants completed a range of programming tasks, a VPT task and an executive functioning assessment. Preliminary findings suggest that there is a significant, positive relation between VPT and programming performance. Furthermore, participants in the Congruent perspective condition performed descriptively better than those in the Incongruent perspective condition, with those in the Embodied programming condition performing highest overall, though differences are not currently significant with the current sample size. Data collection is ongoing and is scheduled to be completed by December 2022.

#### **Developing socio-digital cultural skills in primary school visual art education**

**Keywords:** Digital Literacy and Learning, Instructional Design, Primary Education, Social Media

**Presenting Author:** Sini Hyppänen, University of Helsinki, Finland; **Co-Author:** Martina Paatela-Nieminen, University of Helsinki, Finland; **Co-Author:** Kalle Juuti, University of Helsinki, Finland

Recent years have seen a radical change in the socio-digital culture and technology. We understand socio-digital culture and digital activities as social; they involve network interaction and participation in culturally mediated activities. With just a few clicks children can change the digital reality by using artificial intelligence-enhanced applications. In education there is a need to provide children with adequate new media literacy skills in rapidly changing digital environments. Participating in socio-digital culture involves using digitally created new media as a part of everyday activities, and new digital technologies are often socially transmitted. This poster presents a theoretical background of the ongoing educational design research aiming to understand students learning of new media literacy skills in art education. In design experiments, children are encouraged to interpret and create digital products such as games, memes and animations through investigative, reflective and interpretative processes. The poster presents theory-inspired high-level conjecture and its initial embodiment in primary-level visual arts teaching. Theoretically, this study is based on intertextual art research and applies an intertextual open-ended model developed for art education practice. The model is applied for structuring the lesson plans in digital art meaning-making. Intertextually children's artefacts are seen as interwoven multimodal and pluralistic texts. Reading these texts is an ongoing and open-ended process. Texts in digital products can be, for example, visual, auditory or kinesthetic or all of them together.

#### **Fostering self-regulated learning with metacognitive prompts in an online learning environment**

**Keywords:** Computer-assisted Learning, Educational Technologies, Metacognition, Self-regulated Learning and Behaviour

**Presenting Author:** Rebecca Pape, Catholic University of Eichstätt-Ingolstadt, Germany

Students must self-regulate in online learning environments. Many students, especially younger students, however, struggle to do so. Previous research presents evidence that metacognitive prompts are effective to foster self-regulated learning in online learning environments. Therefore, this study, firstly, investigates the students' metacognitive activities in an online learning environment and secondly, aims to examine the students' use of metacognitive prompts as a means to support self-regulated learning. To assess the students' metacognitive activities and their use of the metacognitive prompts, the participants ( $N=34$ ) completed a 30-min learning phase in the online learning environment while thinking aloud. Preliminary results show that planning seems to be a frequent activity in the online environment and that students using metacognitive prompts refer more frequently to the overall learning process than the control group.

#### **Discovering the Long-Term Effects of Educational Videos**

**Keywords:** Comprehension of Text and Graphics, Computer-assisted Learning, Educational Technologies, Multimedia Learning

**Presenting Author:** Kevin Ackermans, Open Universiteit, Department of Online Learning and Instruction, Netherlands

Emergency Remote Teaching made it clear that designing educational video material is an essential skill for teachers. Multimedia theory offers the evidence-based guidelines generally used to design educational videos. However, this theory is only tested with lab-based and immediate post-tests (Tarchi et al., 2021). Multimedia principles need testing in real-life classrooms conditions (and its distractions) for the length of real-life courses (Mayer et al., 2020). The effect of educational video in the real-time length of courses or "Long term effect" is specified as several weeks by Surma et al. (2019) or a period of two to 28 days by Soderstrom & Bjork (2015). We explore long-term learning from educational video in this paper after a literature analysis finding only three studies that address the subject. To address the lack of research into long-term learning from educational video, we performed five independent studies. The goal of setting up five independent studies was to explore what shared design elements work in a wide array of different real-life classroom conditions. The five independent studies performed on five different subjects in five different schools ranging from four to six weeks. Using this approach, we found a higher Probability of Direction for the generativity principle, multimedia principle, learning strategies and the length of video. This indicates the importance of the principles and design decisions when designing long-term learning from educational video. More robust statements than the linear regressions (see Figure 1,2) on statistical significance can be made at the EARLI conference.

#### **The use of leaderboards in gamified educational settings: A systematic review**

**Keywords:** Achievement, Educational Technologies, Engagement, Motivation

**Presenting Author:** Chunqi Li, The University of Hong Kong, Hong Kong; **Co-Author:** Luke K. Fryer, The University of Hong Kong, Hong Kong

A few researchers have utilised leaderboards, a prevalent gamified element, in education to facilitate students' learning. Nevertheless, no existing review was identified to provide a comprehensive overview regarding the use of leaderboards within education. To address this gap, this systematic review examined the design, implementation, and effectiveness of leaderboards in gamified educational ecologies. This study drew on 23 interventions from 18 peer-reviewed articles. The results indicated that: (1) The majority of studies were conducted in higher education (2) The design principles of leaderboards varied in current studies (3) Leaderboards generally demonstrated a positive influence on students' learning. This review also suggested that the use of leaderboards in education is an emerging and promising research topic. Further research which adopts a more granular perspective is greatly needed.

#### **The relationship between stress and mountain rescue performance during simulation**

**Keywords:** Anxiety and Stress, Health-care Education, Quantitative Methods, Simulation-based Learning

**Presenting Author:** Stefan Hanus, University of Regensburg, Germany; **Co-Author:** Helen Jossberger, University of Regensburg, Germany; **Co-Author:** Hans

Gruber, University of Regensburg, Germany

Although medical training of non-technical skills is abounded, few consider the level of stress during simulation. Stress, however, can affect performance seriously. Thus, simulation training should be similarly stressful as the real-life situations they try to mimic. As the perception of stress can differ between individuals, it is important to gain a deeper understanding of the relations between stress and performance. A study is reported that explores this relationship during the simulation training of mountain rescuers. A total of 42 mountain rescuers participated. Participants completed three different rescue scenarios and rated the level of perceived stress after the dispatch report (pre-test) and after the completion of the scenario (post-test). Results indicate that the type of scenario substantially influences the level of stress as well as the point in time it was the highest. Multiple linear regression analyses showed that for most scenarios the pre-test of stress had a significant positive relation with performance. In contrast, the post-test of stress had a significant negative relation with performance in some scenarios. In conclusion, high levels of stress before simulations function as stimulation for later performance whereas higher reported stress after simulations can be seen as a sign of excessive demand during simulation.

#### **Learning Analytics Dashboard in Higher Education: A Preliminary Study**

**Keywords:** Feedback, Goal Orientations, Higher Education, Learning Analytics

**Presenting Author:**Tania Vieites, Universidad de La Coruña, Spain; **Co-Author:**Ludmila Martins Gironelli, University of Barcelona, Spain

This contribution presents a first exploratory approach on whether there are relations between the goal orientation adopted by higher education students and how they interpret the feedback information provided by a learner dashboard based on learning analytics, as an intention to apply self-regulation strategies in future tasks and in terms of emotional reaction. A study has been carried out with a sample of 13 university students who have used a dashboard based on learning analytics in the framework of the application of an educational innovation. The preliminary results show that there would be relations between the orientations to goals, certain emotions of achievement and the intention to apply self-regulation strategies in future tasks as well as with the emotions aroused by the visualization of information. In addition, there would be a relation between the emotion when visualizing the information and the intention to apply the strategies. The scope of the expansion of this study could have for educational research is discussed.

#### **Session B 1**

20 August 2023 13:30 - 15:00

UOM\_A11

Single Paper

Assessment and Evaluation, Instructional Design, Teaching and Teacher Education

#### **Feedback**

**Keywords:** Assessment Methods, Classroom Assessment, Competencies, Computer-assisted Learning, Engagement, Engineering Education, Feedback, Higher Education, Pre-service Teachers, Reading, Reasoning, Secondary Education, Video-based Learning

**Interest group:** SIG 01 - Assessment and Evaluation, SIG 11 - Teaching and Teacher Education, SIG 18 - Educational Effectiveness and Improvement

**Chairperson:** Yong Liu, Hungary

#### **Validation of the German Version of the Receptivity to Instructional Feedback (RIF) Scale**

**Keywords:** Assessment Methods, Classroom Assessment, Engagement, Feedback

**Presenting Author:**Luca Bahr, Leibniz Institute for Science and Mathematics Education (IPN), Germany; **Co-Author:**Lars Höft, IPN - Leibniz Institute for Science and Mathematics Education, Germany; **Co-Author:**Jennifer Meyer, Leibniz Institute for Science and Mathematics Education (IPN), Germany; **Co-Author:**Thorben Jansen, Leibniz Institute for Science and Mathematics Education (IPN), Germany

In educational psychology, receptivity to instructional feedback (RIF) is an important construct, as individual differences in receptivity relate to differences in the use of feedback. In this proposal, we reported a validation study of an adapted German version of the RIF questionnaire, in which we tested the factorial structure, reliabilities and measurement invariance across gender. We tested a variety of models and found support for the four separate dimensions of receptivity: experiential attitudes, and instrumental attitudes towards feedback, cognitive, and behavioral engagement with feedback. We did not find support for a bifactor representation of the RIF scale. Thus, receptivity to instructional feedback must be assessed through its comprising dimensions. We found the instrument to allow for meaningful cross-gender comparisons. Specifically, we established partial scalar measurement invariance and identified three items with influential parameters. Overall, our validation study of the adapted German RIF version can be used for a critical appraisal of the construct in the German speaking community and for further translations of the scale. At the time of the conference, the predictive value of receptivity dimensions for personality dimensions will be discussed and compared to patterns found in English speaking samples.

#### **The Power of Feedback: on the effects of different variants of feedback on reading philosophy texts**

**Keywords:** Computer-assisted Learning, Feedback, Reading, Secondary Education

**Presenting Author:**Arjan Koek, GION - University of Groningen, Netherlands

Feedback that is used in educational contexts can be a powerful method for helping students to optimize their learning. Nearly all research on feedback has focused on task-level feedback in well-structured learning domains such as mathematics, biology, and chemistry. Findings for the effectiveness of feedback in these fields vary widely, are inconsistent, and sometimes even contradictory, possibly because different moderator variables such as the content and the timing of the feedback influence the effects of that feedback. Very little is known about the effectiveness of feedback and the influence of moderator variables in so-called ill-structured learning domains like literature, history, and philosophy. This paper seeks to contribute to this area of research by studying the conditions under which feedback in the ill-structured learning domain of the philosophy of science are the most effective. To this end, a randomized experimental pre-test posttest study was conducted in which 357 pre-university students were randomly assigned to eight feedback conditions, with content, timing, and allocation as factors. Results showed no significant effects of content, timing, and mode of allocation, although a few positive trends regarding the factor timing was visible in the data.

#### **Characteristics of first-year engineering students' most impactful feedback experiences**

**Keywords:** Competencies, Engineering Education, Feedback, Higher Education

**Presenting Author:**Kurt Coppens, KU Leuven, Belgium; **Co-Author:**Lynn Van den Broeck, KU Leuven (BE), Belgium; **Co-Author:**Naomi Winstone, University of Surrey, United Kingdom; **Co-Author:**Greet Langie, KU Leuven, Belgium

It is widely recognized that students should play an active role in the feedback process by developing their 'feedback literacy'. To understand first-year engineering students' engagement with feedback, this study collected their most impactful feedback experiences through reflective logs. The data are analysed in two ways: (1) the most frequent features of the feedback experiences are outlined, and (2) the illustrated feedback literacy characteristics are identified. Individualised and oral feedback experiences are reported as the most impactful ones, while educators are the most frequently mentioned source of impactful feedback. The number of peers involved in the described feedback experiences increases when reflective exercises are linked to the peer-feedback assignments. By asking students to reflect on their experiences with peer-feedback, they are more likely to perceive these activities as having an important impact on their learning. The feedback literacy characteristics mentioned in the first semester are mostly limited to committing to feedback as improvement and appreciating feedback as an active process. In the second semester, more varied characteristics of feedback literacy are detailed by students in their reflective logs, such as actively eliciting feedback, considering feedback from multiple sources and demonstrating openness to receive comments from others. This again suggests that students perceive peer-feedback as more impactful when it is linked to a reflective exercise and illustrates that self-reflection should be encouraged as an important skill for students to enhance their feedback literacy.

#### **Video-based feedback in a Chilean teacher program: focus and arguments from supervisors and students**

**Keywords:** Feedback, Pre-service Teachers, Reasoning, Video-based Learning

**Presenting Author:**Jocelyn Gaete, Pontificia Universidad Católica de Chile, Chile; **Co-Author:**Magdalena Müller, Pontificia Universidad Católica de Chile, Chile

One of the challenges in teacher education is how to support pre-service teachers in putting their teaching theory into practice. However, applying such knowledge in the classroom does not ensure improvements in performance unless it is accompanied by feedback that stimulates reflection. Classroom videos are widely used to represent teaching practices for different purposes, but their use in feedback and reflection processes seems to be less frequent. Based on a case study in a Chilean teacher training program with a practice-based curriculum, this research describes the areas on which supervisors and prospective teachers focus their attention as they analyze their teaching videos and the arguments to support their decisions. These processes were explored through think-aloud protocols and video-stimulated recall interviews. The results show that both actors focus on the quality of feedback delivered to students and the strategies used to collect evidence of learning. The focuses are justified in being able to observe teaching practices that respond to established assessment indicators, but with some differences. While supervisors base their decisions on pointing out strengths and aspects to be improved in general, without delving deeper into the teachers' pedagogical decisions, the pre-service teachers make reflections focused on the quality of their performance but show difficulties in suggesting adjustments. These findings could illuminate our understanding of how to scaffold or mediate the analysis of student teachers' own practice in order to improve it.

## Session B 2

20 August 2023 13:30 - 15:00

UOM\_A06

Single Paper

Lifelong Learning, Teaching and Teacher Education

### Teachers' Professional Development

**Keywords:** Competencies, In-service Teachers, Lifelong Learning, Mentoring and Coaching, Qualitative Methods, Teacher Professional Development, Tool Development

**Interest group:** SIG 11 - Teaching and Teacher Education, SIG 14 - Learning and Professional Development

**Chairperson:** Barbora Nekardova, Czech Republic

### A systematic review of in-service mentoring expertise from a transformative learning perspective

**Keywords:** In-service Teachers, Mentoring and Coaching, Qualitative Methods, Teacher Professional Development

**Presenting Author:**Xuwei Wang, Faculty of Educational Science, University of Helsinki, Finland; **Co-Author:**Jukka Husu, University of Turku, Finland; **Co-Author:**Auli Toom, University of Helsinki, Finland

To make teaching an intellectually attractive profession with opportunities for professional development for novice teachers, effective mentoring and qualified mentors are essential. Despite many review studies that have summarized the relevant aspects of the mentoring process on a general level, only a few have focused on elements required to be a good mentor, and most of them concentrated on cooperating teachers in the pre-service teaching practicum, not in-service training. Thus, there is a need to explore what expertise is required particularly for mentoring novice teachers for a relatively long period soon after they start in the teaching profession. Informed by the well-regarded definition of "mediation" role (cognitive, emotional, and social) mentor teachers play in in-service teacher training, our review applied a theoretical framework from transformative learning perspective to synthesize mentoring expertise from 44 empirical studies (2015-2022). The methodological analytical result shows that qualitative, small-scale, and interpretative research design across K-12 educational levels with little attention to disciplinary specificity was the dominant choice of the existing research on in-service teacher mentoring. Then, we present a synthesis of mentoring expertise shown in the current literature and its influencing factors. First, eight categories with 21 themes under three dimensions emerged in the analysis of data. Second, we summarize mentor-and context-related factors that were influential in mentoring expertise for supporting novice teachers in their early careers. Finally, our review managed to propose a theoretically informed, empirically driven, and wide-ranging conceptual framework of mentoring expertise in in-service teacher education.

### How the Perception Is Related with the Competencies in the Lifelong learning

**Keywords:** Competencies, In-service Teachers, Lifelong Learning, Teacher Professional Development

**Presenting Author:**Win Phyu Thwe, University of Szeged, Doctoral School of Education, Hungary; **Co-Author:**Anikó Kálmán, University of Szeged, Doctoral School of Education, Hungary

The aim of this study is (a) to explore the perceptions of teacher trainers on lifelong learning and their lifelong learning competencies. The sample of the research is composed of 232 teacher trainers from different education colleges by random sampling method. It was found that there was a significantly positive relationship between the perception on lifelong learning and lifelong learning competencies ( $p = 0.72$ ,  $p < 0.01$ ). According to Mann-Whitney U test, a statistically significant difference was found ( $U=4328.00$ ;  $p < .05$ ) in the perception on lifelong learning by the region variable. There was no difference between teacher trainers who are working in Education Degree Colleges in the upper region and those who are from lower region ( $U=5272.00$ ;  $p=0.80$ ) in Lifelong Learning Competencies. The Kruskal-Wallis test revealed that there is no significant differences between education levels with respect to perception on lifelong learning, ( $p=0.65$ ) and Lifelong Learning Competencies ( $p=0.45$ ). In terms of teaching service, there is also no significant differences between teaching experiences with respect to both perception on lifelong learning, ( $p=0.25$ ) and Lifelong Learning Competencies ( $p=0.42$ ).

### Teacher Educators analyze a Lesson Plan - Content Validity of a Stimulus

**Keywords:** Competencies, Qualitative Methods, Teacher Professional Development, Tool Development

**Presenting Author:**Madlena Kirchhoff, Leibniz University Hannover, Germany; **Co-Author:**Katharina Mueller, Leibniz University Hannover, Germany

In terms of research, lesson planning skills have been approached from various perspectives. Planning itself is a complex process that can be distinguished into different approaches such as analyzing or creating. There are many studies that ask teachers to create a plan but less studies that ask teachers to analyze and evaluate existing lesson plans. However, analyzing before creating a plan has been shown to be helpful and important for pre-service teachers when learning to plan. Therefore, the aim of this paper is to present steps of a standardized measurement tool development with regard to analytical skills in lesson planning while focusing on aspects of validity. When developing such a tool, various decisions have to be made relating to the stimulus, the test format and test context. This paper focusses on content validity of the stimulus and presents results from eight think-aloud protocols. Qualitative content analysis shows that the experts interviewed basically noticed the same mistakes in terms of instructional quality but provided different alternatives and comments regarding the test context.

## Session B 3

20 August 2023 13:30 - 15:00

UOM\_A07

Single Paper

Culture, Morality, Religion and Education, Learning and Special Education, Lifelong Learning

### Inclusive Education

**Keywords:** Attitudes and Beliefs, Communication Skills, Communities of Learners and/or Practice, Gender Issues, Inclusive Education, Learning and Developmental Disabilities, Lifelong Learning, Mixed-method Research, Special Education, Teacher Efficacy

**Interest group:** SIG 11 - Teaching and Teacher Education, SIG 15 - Special Educational Needs

**Chairperson:** Ahsen Çini, University of Oulu, Finland

### **Lesbian-parent families in Greece: the experience of preschool and primary school teachers**

**Keywords:** Attitudes and Beliefs, Gender Issues, Inclusive Education, Teacher Efficacy

**Presenting Author:**Dimitris Tsekouras, MSc Counseling, Department of Early Childhood Education National and Kapodistrian University of Athens, Greece., Greece; **Co-Author:**Lida Anagnostaki, MSc., PhD. Assistant Professor of Psychology (Psychodynamic Perspectives in Developmental Psychology) Department of Early Childhood Education National and Kapodistrian University of Athens, Greece

The paper aims to explore Greek preschool and primary school teachers' experience regarding students coming from lesbian-parent families. In recent years, the composition of school classes in Greece has become more diverse. However, the inclusion of students and families from the LGBTQ+ community in the educational system and the teachers' role in creating inclusive schools has not been systematically investigated. Six primary school teachers who had had experience with students from lesbian-parent families were interviewed. Their narratives were analysed using interpretative phenomenological analysis, a qualitative research method which allows the in-depth examination of the participants' experiences while simultaneously acknowledging the researcher's active role. The analysis of the interviews yielded four superordinate themes (the 'uncanny', cooperation between teachers and lesbian parents, management of the children coming from lesbian-parent families in the classroom, inclusion of lesbian-parent families within the broader educational context). The discussion focuses on the need for teacher training on LGBTQ+ issues in order to lay robust foundations for inclusion in schools.

### **Benefits of exposure to sign language for non-verbal adult with ASD: analysis of filmed interactions**

**Keywords:** Communication Skills, Inclusive Education, Lifelong Learning, Mixed-method Research

**Presenting Author:**Christelle Gérard, Université Paris 8, France; **Co-Author:**Brigitte Garcia, Paris 8 University, France; **Co-Author:**Sabine Zorn, National higher institute for training and research on special needs education (INSHEA), France

Based on work showing the benefits of sign language acquisition for children with ASD and so-called "non-verbal" (e.g., Kurt, 2011; Adam, 2020), we wished to explore the potential contributions of French sign language (LSF) for non-verbal adults with autism spectrum disorder (ASD) for whom augmentative techniques have not -or no longer- given satisfactory results. The research will present focuses on the acquisition of communicative and linguistic skills by a non-verbal ASD adult exposed to LSF over a five-year interspersed period with breaks. The fine-grained observation of emerging communicative and linguistic skills, which are "weak signals" in non-verbal ASD people, requires the implementation of a methodological protocol. We participated in multi-disciplinary reflections of a working group that met monthly for 6 months. Our work consisted of the analysis of a video recording of this young adult with non-verbal ASD exposed to LSF. Our objective was to evaluate the extent to which regular exposure to LSF could constitute a contribution for non-verbal adults with ASD. More precisely, we sought to analyze and characterize in depth these possible benefits in terms of the development of communicative and linguistic skills. We elaborate an annotation scheme focusing on several key points: linguistic aspects, interaction, and didactic aspects. We wanted to determine the nature of the interactions observed between this young adult with ASD and his interlocutors. Our analyses allow us to identify several important contextual variables, but also aspects of behavior that remain difficult to characterize, that we will present.

### **The inclusion and education of pupils with PIMD: What contributions from specialised institutions?**

**Keywords:** Communities of Learners and/or Practice, Inclusive Education, Learning and Developmental Disabilities, Special Education

**Presenting Author:**Mélie Bourger-Bouvet, Paris Nanterre University, INS HEA, France; **Co-Author:**Esther Atlan, INS HEA, France; **Co-Author:**Minna Puustinen, INS HEA, France

Children with profound intellectual and multiple disabilities (PIMD) are generally considered to have the highest and most complex support needs. Their education is often provided in 'special' classes or schools, but many still do not have such opportunity (Lyons & Arthur-Kelly, 2014). In France, the drive for inclusion has led to new coalitions between institutions administered by the separate Ministries of Education and Social Affairs. A paradigm shift is occurring, with staff from specialised institutions being deployed within mainstream schools to support the education of pupils with PIMD in special classrooms. The implementation of these arrangements requires close coordination between professionals from distinct communities of practice. To better understand this phenomenon, a focus group study was conducted in a specialised institution. Nine professionals working with children with PIMD (i.e., educators, carers, social and educational workers, and a service manager) participated in a semi-structured group interview. Data were collected on the representations of work (e.g., type of activities, duties, norms or values) and on educational practices (e.g., strategies, methods, attitudes or gestures). This interview was audio and video recorded for verbatim accuracy, and a thematic analysis was conducted on the transcripts. Results highlight a representation of the activity as being based on care and education for autonomy and necessarily reflexive, whereas the educational practices are anchored on both high-quality relationships and a deep understanding of the children's needs. Through an overview of their practices, this preliminary study illustrates some of the possible contributions of professionals from specialised institutions to inclusive education.

## **Session B 4**

20 August 2023 13:30 - 15:00

UOM\_A04

Single Paper

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

### **Educational Technologies**

**Keywords:** Attitudes and Beliefs, Communities of Learners and/or Practice, Computer-supported Collaborative Learning, Conceptual Change, Digital Literacy and Learning, Informal Learning, Instructional Design, Large-scale Assessment, Misconceptions, Multimedia Learning, Pre-service Teachers, Qualitative Methods, Quantitative Methods, Secondary Education, Social Media, Teaching/Instructional Strategies

**Interest group:** SIG 03 - Conceptual Change, SIG 07 - Technology-Enhanced Learning And Instruction

**Chairperson:** Michelle Laux, PH Freiburg, Germany

### **Learning styles unmasked – Conceptual change among pre-service teachers using podcasts and texts**

**Keywords:** Conceptual Change, Misconceptions, Multimedia Learning, Pre-service Teachers

**Presenting Author:**Julia Götzfried, University of Kassel, Institute of Educational Science, Germany; **Co-Author:**Lea Nemeth, University of Kassel, Institute of Educational Science, Germany; **Co-Author:**Victoria Bleck, University of Kassel, Institute of Educational Science, Germany; **Co-Author:**Frank Lipowsky, University of Kassel, Germany

The learning styles myth is highly prevalent among (pre-service) teachers. For dissolving such misconceptions, research emphasises the effectiveness of conceptual change texts compared to expository texts. This benefit is explained by cognitive conflicts evoked by contrasting misconceptions and facts, encouraging the reflection of one's own beliefs. However, there is little research on whether also other media, such as podcasts, can promote conceptual change among pre-service teachers and whether they are as effective as text-based interventions. Accordingly, this study investigates if both media, conceptual change texts and podcasts, are equally suitable compared to an expository information presentation for inducing conceptual change among pre-service teachers regarding their beliefs about the learning styles myth. The experimental study is based on a 2 (conceptual change vs expository) x 2 (podcast vs text)-between subjects-design. 105 pre-service teachers were randomly assigned to one of the four conditions. Students' beliefs about the learning styles myth were measured immediately before and after the intervention, four weeks as well as eight weeks later. As expected, the conceptual change conditions led to a stronger decrease in students' beliefs compared to the expository conditions ( $p < .05$ ,  $\eta^2 = .03$ ). Both media were, however, equally effective ( $p = .56$ ;  $\eta^2 = .01$ ).

### **Examining Twitter and Reddit use to make sense about personal finance**

**Keywords:** Communities of Learners and/or Practice, Informal Learning, Qualitative Methods, Social Media

**Presenting Author:**Stephanie Bowles, Penn State, United States; **Presenting Author:**Jose Sandoval-Llanos, Penn State, United States

In the last few years, social media platforms have become a legitimate source of information. Although this is not their primary goal, many people around the

world are looking at these platforms as spaces to exchange knowledge and fill out their knowledge gaps about diverse topics. For example, with the increasing presence of finance in our lives, and the overwhelming pressure on people to take control of their finances, more individuals are turning to these platforms to get advice and learn about personal finance management. A comparative critical discourse analysis of conversation threads on Twitter and Reddit about credit scores allowed us to explore how people make sense of financial issues affecting their everyday lives through participation on these platforms. The results of this preliminary study show that users engage in deep and valid discussions about personal finances. While the environment of each platform produces a different atmosphere and participation behaviors, learners in both platforms can obtain valuable financial knowledge and receive feedback in real-time to solve their inquiries.

**We've added beliefs to the SELFIE. This is what happened.**

**Keywords:** Attitudes and Beliefs, Digital Literacy and Learning, Quantitative Methods, Secondary Education

**Presenting Author:**Adriaan Vervoort, UHasselt, Belgium; **Co-Author:**Nuria Gonzalez Castellano, Hasselt University/University of Jaén, Belgium; **Co-Author:**Lisa Koutsoviti Koumeri, Hasselt University, Belgium; **Co-Author:**Katrien Struyven, Hasselt University / Vrije Universiteit Brussel, Belgium; **Co-Author:**Koen Vanhoof, UHasselt, Belgium

The SELFIE is a self-assessment questionnaire based on the DigCompOrg construct, used to measure the digital competency of an organisation. According to literature, technology beliefs and attitudes play an important role in the implementation of digital technology in the learning environment. The SELFIE does not contain questions related to beliefs. Following preliminary research as part of the Interreg EMR-project Skills4You, we suggest adding 14 descriptors to the SELFIE, of which seven are related to beliefs as a new thematic element. We perform statistical analysis to assess the quality, reliability and construct validity of the suggested new elements. In particular, we use Item Response Theory, Cronbach's alpha and Omega, and Confirmatory Factor Analysis. The analysis is ongoing and we expect to find that the quality of the SELFIE is enhanced after the inclusion of the new descriptors. This will, first, provide schools using the newly developed S4Y-SELFIE with more accurate information on their digital capacity and, second, allow us to propose better educational policy recommendations in our future work within the Skills4You project.

**Gaps Between Teaching and Learning in Music MOOCs: Perception and Reality**

**Keywords:** Computer-supported Collaborative Learning, Instructional Design, Large-scale Assessment, Teaching/Instructional Strategies

**Presenting Author:**Giorgio Zampirolo, The Open University, United Kingdom, United Kingdom; **Co-Author:**Naomi Barker, The Open University, United Kingdom; **Co-Author:**Bart Rienties, Open University, United Kingdom

Today, there are over 2000 music MOOCs available and 3,000,000 participants (Class Central). Despite this popularity, there is hardly any research on music massive open online courses (music MOOCs). In an increasingly technological society, there is a need to question the way music is taught as the gap between what is possible using technology and what is used in contemporary music education is substantial. Taking pedagogical literature as a starting point, this research focuses on the space that separates teaching approaches and learning experiences and identifies key factors in bridging it as they are perceived by MOOC teachers. Using a mixed-methods approach, this research compared teacher and learner perspectives, exploring the achievement of learning outcomes and the characteristics of the learning experience. This study used quantitative (datasets) and qualitative data (participant observations and semi-structured interviews), and investigated how people learn and teach music in MOOC environments, and where those musics are created, performed, and learned (whether online, offline, or a mix of online and offline). The findings showed that music MOOCs facilitate new approaches to music teaching and promote engaging with music in participatory ways using media and technology. This study contributes to the literature in the under-researched context of learning music with MOOCs and supports the development of an effective music MOOC pedagogy, proposing ways to close the gap between teaching and learning.

## Session B 5

20 August 2023 13:30 - 15:00

UOM\_A09

Single Paper

Higher Education, Motivational, Social and Affective Processes

### Well-being

**Keywords:** Achievement, At-risk Students, Burnout, Engagement, Higher Education, Peer Interaction, Primary Education, Secondary Education, Social Interaction, Well-being

**Interest group:** SIG 04 - Higher Education, SIG 08 - Motivation and Emotion, SIG 18 - Educational Effectiveness and Improvement

**Chairperson:** Mary Ann Isaacs, Vrije Universiteit Brussel (VUB), Belgium

### The Relationship between Well-being, Engagement, and Achievement of Swiss Secondary School Students

**Keywords:** Achievement, Engagement, Secondary Education, Well-being

**Presenting Author:**Jakob Schnell, University of Bern, Institute of Educational Science, Switzerland; **Co-Author:**Katja Saxer, University of Bern, Institute of Educational Science, Switzerland; **Co-Author:**Julia Morinaj, University of Bern, Switzerland; **Co-Author:**Tina Hascher, University of Bern, Institute of Educational Science, Switzerland

Students' well-being has become an important part of education policy in many countries (OECD, 2017). Research shows that well-being contributes to students' engagement in school, enhances learning processes in the classroom, and can support academic achievement (Pietarinen et al., 2014). Evidence suggests a mediation of the effect of student well-being on academic achievement through school engagement (Gutman & Vorhaus, 2012). However, prior research has neglected the multidimensionality of the constructs of well-being and school engagement. The present study used a six-dimensional student well-being model with positive and negative dimensions (Hascher, 2007) and a three-component school engagement model (Fredricks et al., 2004) to untangle the differential effects of positive and negative well-being dimensions on the three components of school engagement and the influence of those three dimensions on academic achievement. A multiple regression analysis using a sample of  $N = 710$  Swiss secondary school students, with student well-being dimensions as predictor variables, academic achievement as outcome variable and school engagement components as moderator variables, revealed mediation of the effects of enjoyment in school and positive academic self-concept on achievement through cognitive and behavioral engagement.

### School well-being profiles among elementary school students and relations to academic performance

**Keywords:** Burnout, Engagement, Primary Education, Well-being

**Presenting Author:**Linda Osterholm, Åbo Akademi University, Faculty of Social Sciences, Finland; **Co-Author:**Anna Widlund, Åbo Akademi University, Finland; **Co-Author:**Johan Korhonen, Åbo Akademi University, Finland

#### Abstract

Using a person-centered approach, this study will examine what school well-being profiles (i.e., school engagement and school burnout) can be identified among students in upper elementary school (grades 4, 5, and 6) and how stable those profiles are during one school year. Additionally, this study will investigate how these well-being profiles are related to academic performance and examine possible gender differences within the profiles. At the time of writing this abstract, a total of 323 students (estimated  $N = 1000$  when all data is collected in 2023) completed digital self-reported measures of school burnout and engagement. Students' performance was measured using a standardized mathematics test. Latent profile analysis revealed three well-being profiles; positive well-being (i.e., high engagement and low burnout; 17%), neutral well-being (i.e., average levels of both engagement and burnout; 53%), and negative well-being (i.e., low engagement and high burnout; 30%). Interestingly, no significant differences in academic performance emerged between the well-being profiles, suggesting that well-being and performance may not be as intertwined in the early school years. Further, no significant dissimilarity of genders between the well-being profiles was identified, implying that gender differences may start to develop later on in the school years. As these are only preliminary findings from T1, the results might fluctuate when presenting the complete longitudinal data in 2023.

**Keywords**

Primary education, school well-being, academic performance, gender differences

#### **Validation of the Burnout Assessment Tool for university students in the Dutch context**

**Keywords:** At-risk Students, Burnout, Higher Education, Well-being

**Presenting Author:**Piermarco Consiglio, University of Groningen, Netherlands; **Co-Author:**Marjon Fokkens-Bruinsma, University of Groningen, Netherlands; **Co-Author:**Ellen Jansen, University of Groningen, Netherlands; **Co-Author:**Joke Fleer, University of Groningen, Netherlands

Burnout is a major contributor to the dropout rate, low well-being and academic performance of university students. However, the existing questionnaires for assessing burnout have shown methodological and practical problems. To overcome these limitations, a new questionnaire has been developed, namely the Burnout Assessment Tool (BAT). Previous validations of the BAT found that a second-order factor model, with four first-order factors (i.e., exhaustion, mental distance, emotional and cognitive impairment) loading on a higher-order factor (BAT-C) and two first order-factors (i.e., psychological distress and psychosomatic complaints) loading on a second higher-order factor (BAT-S), fits the data better. This study aims to offer one of the first investigations into the psychometric properties, factor structure and invariance of the instrument across Dutch and international university students from a Dutch university. The responses were collected by means of an online survey and the sample consisted of 378 Dutch and 114 international students aged between 17 and 55 years old ( $M=22.79$ ;  $SD=4.26$ ). Our preliminary results are encouraging as they provided evidence for the factorial validity of the second-order factor model and invariance of the instrument. The BAT appears to be a valid and reliable tool that can be used with university students in Dutch academic settings. **Keywords:** Burnout; Burnout Assessment Tool; University students; Validation

#### **The Role of Teacher–Student and Student–Student Relationships for Well-Being in Secondary Education**

**Keywords:** Peer Interaction, Secondary Education, Social Interaction, Well-being

**Presenting Author:**Katja Saxer, University of Bern, Institute of Educational Science, Switzerland; **Co-Author:**Jakob Schnell, University of Bern, Institute of Educational Science, Switzerland; **Co-Author:**Julia Morinaj, University of Bern, Switzerland; **Co-Author:**Tina Hascher, University of Bern, Institute of Educational Science, Switzerland

Relationships that students form with their teachers and peers in the classroom are important for their academic, social, and emotional development. The quality of teacher–student relationship may influence student well-being as well as student–student relationship. To contribute to a deeper understanding of classroom relationships as well as to demonstrate the importance of fostering well-being in schools, this study examines the associations between teacher–student relationship, student–student relationship, and student well-being among students in grade 7 ( $N = 709$ ) in Switzerland. Results of the mediation regression analysis showed that high quality relationships with teachers affect peer relationships in the classroom and both teacher–student and student–student relationships effect student well-being. The findings, however, differ regarding different dimensions of student well-being. Moreover, the quality of student–student relationship mediated the association between teacher–student relationship and student well-being. Taking both teacher–student and student–student relationships into account as well as providing a multi-dimensional approach to student well-being add to a deeper understanding of processes in classrooms and enable to overcome the limitations of prior studies measuring relationships in the classroom separately and using only a sole indicator in a single domain or several separate measures to investigate well-being in school.

#### **Session B 6**

20 August 2023 13:30 - 15:00

UOM\_R02

Poster Presentation

Cognitive Science, Culture, Morality, Religion and Education, Instructional Design, Learning and Instructional Technology, Learning and Social Interaction, Teaching and Teacher Education

#### **Cognitive Development**

**Keywords:** Achievement, Attitudes and Beliefs, Bilingual Education, Cognitive Development, Cognitive Skills and Processes, Creativity/Divergent Thinking, Critical Thinking, Cultural Diversity in School, Dialogic Pedagogy, Early Childhood Education, Educational Neuroscience, Educational Technologies, Higher Education, Knowledge Construction, Meta-analysis, Metacognition, Migrant / Refugee and Minority students, Misconceptions, Pre-service Teachers, Problem Solving, Reading, Science Education, Secondary Education, Teaching/Instructional Strategies

**Interest group:** SIG 04 - Higher Education, SIG 05 - Learning and Development in Early Childhood, SIG 11 - Teaching and Teacher Education, SIG 18 - Educational Effectiveness and Improvement, SIG 21 - Learning and Teaching in Culturally Diverse Settings, SIG 22 - Neuroscience and Education

**Chairperson:** Lorenzo Miani, Italy

#### **Learning from errors in the classroom with a joint intervention on mindset and metacognition**

**Keywords:** Attitudes and Beliefs, Metacognition, Problem Solving, Secondary Education

**Presenting Author:**Cristina Pascua, Mondragon University. Faculty of Humanities and Education, Spain

Being able to learn from errors should help individuals to manage unexpected events, as uncertain situations provoke errors (Rybowiak et al. 1999). Accumulating evidence suggests that beyond affective and motivational reactions to errors, cognitive and behavioural reactions, which are specifically adjusted to the error in question, ought to be considered (Yin, Wang, Evans & Wang, 2019). However, to the best of our knowledge, experimental or quasi-experimental studies that examine these two processes within the same participants in real-educational settings appears to be scarce (Tulis et al. 2018). Therefore, the present study targets this research gap and aims to develop, implement, and evaluate the effect of a joint intervention designed to enhance adolescents' ability to learn from their self-made errors (at the mathematical complex problem task) by simultaneously strengthening their emotion control and metacognitive skills (from the viewpoint of growth-mindset theory and productive failure). To test this intervention, third year secondary school individual classes will be assigned randomly to one cell of a 2 x 2 factorial design (Growth mindset intervention vs. control) x (Metacognition intervention vs. control). Based on previous findings, we hypothesised that the effect of the metacognitive intervention on learning from failure will be improved by supplementing such instruction with additional instructions specifically designed to enhance people perception of failure. To finish, we predict a positive impact of our intervention on achievement related outcomes such as students' motivation and academic performance.

#### **Effects of Executive Function Training in Children and Adolescents: a Meta-Analysis**

**Keywords:** Achievement, Cognitive Skills and Processes, Educational Neuroscience, Meta-analysis

**Presenting Author:**Sophie McMullin, Université du Québec à Montréal (UQAM), Canada; **Co-Author:**Steve Masson, Université du Québec à Montréal (UQAM), Canada

Executive functions (EFs) are top-down control mechanisms that enable goal-directed behavior (Miyake & Friedman, 2012). They include working memory, inhibitory control, and cognitive flexibility. These cognitive processes have been linked to academic success (Bowmer *et al.*, 2018). As a result, many researchers have sought to develop EFs training. However, the results are inconsistent across studies. The problem lies in the likelihood of observing transfer, i.e. the influence of past learning on current or future learning (Perkins et Salomon, 1992). Typically, in the field of cognitive training, only near transfer is observed, i.e. transfer occurs when the training and assessment tasks are somewhat similar, and far transfer, when the tasks are dissimilar, seems more elusive (Sala & Gobet, 2017). However, this ignores other conceptualizations of transfer, and then potentially masks effects of cognitive training. Considering this point, we therefore used a detailed taxonomy of transfer (Barnett and Ceci, 2002) to realize a meta-analysis combining 103 studies of various cognitive trainings with neurotypical children and adolescents aged 3 to 18 years. Our results show that working memory seems to be the EF that benefits most from cognitive training, regardless of the training goal. Furthermore, we observed that long delays between training and assessment, as well as substantial modifications of the social context between training and assessment, seemed to impair transfer. These results offer new perspectives on the effects of cognitive training. More importantly, they propose a new way to analyze of cognitive training studies.

### **Effects of Advanced Theory of Mind and Executive Functions on Undergraduates' Sourcing Skills**

**Keywords:** Cognitive Development, Critical Thinking, Higher Education, Reading

**Presenting Author:** Yann Dyoniziak, CeRCA UMR7295 Université de Poitiers, France; **Co-Author:** Anna Potocki, LaRAC Université de Grenoble, France; **Co-Author:** Émilie Dujardin, CeRCA UMR7295 Université de Poitiers, France; **Co-Author:** Jean-François Rouet, CeRCA UMR7295 Université de Poitiers, France

The present study examines some dimensions of cognitive development that may influence undergraduate student's evaluation of information sources. Source evaluation rests on several dimensions of sources, such as the author's expertise and intentions. Understanding a source requires one to interpret the perspective of the source, i.e. what the source knows or wants. We examined whether students' second-order theory of mind (knowing what X knows about Y's knowledge) and Advanced theory of mind (allowing to understand complex speech acts and relying on second-order mental state understanding) can account for their ability to accurately evaluate the intentions of various sources as they offer discrepant accounts on a controversial topic. A hundred undergraduates were tested for lexical quality, executive functions, reading comprehension, second-order theory of mind and Advanced theory of mind. They then were tasked to read a series of accounts assessing their sourcing abilities. Data were being collected at the time of submission.

### **An Intersectionality Perspective on Investigating Diverse Kindergarteners' Cognitive Flexibility**

**Keywords:** Bilingual Education, Cognitive Development, Early Childhood Education, Migrant / Refugee and Minority students

**Presenting Author:** Sejla Subasic, CITY College, Serbia; **Co-Author:** Lito Eleni Michalopoulou, Aristotle University of Thessaloniki, Greece

Bilingual students and students from language-minority households appear to have different developmental trajectories compared to their monolingual peers and, consequently, may experience negative academic consequences (Hoff, 2013). Nonetheless, many studies have demonstrated positive outcomes for bilingual students, including the so-called "bilingual advantage," that is bilingual children perform better on executive function (EF) tasks than their monolingual counterparts (Van den Noort et al., 2019). The goal of the present study was to examine whether language status in socioeconomically diverse children is able to predict performance on cognitive flexibility tasks. We have expected to find that language status would be able to predict performance on cognitive flexibility tasks. In order to do so we have gathered data from the Early Childhood Longitudinal Study of the Kindergarten class of 2010-2011 (ECLS-K:2011) and have analyzed it by performing a regression-based analysis. The results of the analysis indicated that language status is a significant predictor for performance on cognitive flexibility tasks, however, the results also indicated that out of all variables (Language Status, Immigration Status) SES has the highest significance in predicting such. In order to minimize discrepancies and offer a holistic perspective of bilingualism and executive functions as an experience we suggest an intersectionality approach.

### **Effect of dialogic instruction and storybook on children's knowledge construction**

**Keywords:** Dialogic Pedagogy, Early Childhood Education, Knowledge Construction, Reading

**Presenting Author:** Xuanyi WU, The Education University of Hong Kong, Hong Kong; **Co-Author:** James Ko, The Education University of Hong Kong, Hong Kong

Shared book-reading activities established a collaborative learning environment to engage children in productive and purposeful activities and improve their cognitive socialization. Few studies have investigated teacher-child dialogic reading as a context for constructing knowledge. This study explored the effects of dialogic instruction on kindergarten children's construction of conservation and conflict resolution knowledge. One hundred and twenty K2 & K3 children were recruited from two campuses of a Montessori kindergarten with similar socioeconomic backgrounds in Kunming, China. An experimental design was conducted to quantitatively explore children's conservation and conflict resolution development. The study's results indicated that while dialogic instruction and storybook can significantly but separately accelerate conservation construction in pre-operational stage kindergarten children, there are no significant additive effects. Unlike conservation, dialogic instruction, but not a storybook, can facilitate conflict resolution as a form of social knowledge.

**Keywords:** dialogic teaching, conservation, social knowledge, knowledge construction, reading

### **Exploring Student's Performance on Mathematical Creative Thinking through An Ethnomathematics**

**Keywords:** Cognitive Skills and Processes, Creativity/Divergent Thinking, Cultural Diversity in School, Secondary Education

**Presenting Author:** Suherman Suherman, University of Szeged, Hungary; **Co-Author:** Tibor Vidákovich, University of Szeged, Hungary

In the 21<sup>st</sup> century, creative thinking skills is the key to educational goals. Some cognitive variables are evaluated widely by psychologists to characterize and evaluate creativity. This research aims to assess psychometric properties of Mathematical Creative Thinking-based test Ethnomathematics (MCTtBE) and to analyze the students performance. After applying to 186 secondary students, this test was analyzed into item analysis. Rasch measurement and descriptive statistics were incorporated into the statistical analysis using SPSS and Winstep. This finding indicates that the logit value performed was 0.77 for persons and 0.99 for items, there was no DIF in this research, the majority of male and female students had high mathematical creative thinking (MCT) abilities, and originality and elaboration subtests demonstrated no statistically significant differences across all grade levels. This work contributes to the literature in the field of MCT evaluation based on ethnomathematical tests by providing a case study for academics and researchers interested in evaluating MCT skills among students.

### **A Pedagogical Innovation On Enhancing Creativity: A Bourdieuan analysis of ICT-Play in a preschool**

**Keywords:** Creativity/Divergent Thinking, Early Childhood Education, Educational Technologies, Teaching/Instructional Strategies

**Presenting Author:** Elaine Lam, The Education University of Hong Kong, Hong Kong; **Presenting Author:** Yasmin Fong, The Education University of Hong Kong, Hong Kong; **Co-Author:** James Ko, The Education University of Hong Kong, Hong Kong; **Co-Author:** Jin Sun, The Education University of Hong Kong, Hong Kong

Facing the immense pressure to catch up with the international trend, our city, Hong Kong's education authority has pronounced creativity, play and ICT as the key aims in the kindergarten curriculum (Curriculum Development Council, 2017). However, it is not easy to promote changes in schools which usually ends with ostensible technology integration (Law et al., 2011). Identifying the quality of lessons and barriers to teachers' profession on this topic is the initial step to developing strategies for improvement.

This paper aims to explore the potential for combining these three aspects and ground uses for teaching Creativity with ICT-Play, as well as reforming a better Early Childhood Education (ECE) curriculum of the concept. This article defines creativity and ICT-Play in ECE and studies an integration model applicable to local kindergarten curricula with feasible pedagogies, followed by an evaluation of the current practices and problems in this issue based on interview data with the support from the i-CREATE model and Bourdieu's Theory of Practice.

The study shows how are the quality of teaching creativity with ICT-Play and the impacts of different capitals mentioned in Bourdieu's Theory of Practice on teachers affect their implementation of ICT-Play pedagogies in local kindergartens.

### **The influence of teachers' professional knowledge on diagnostic judgments about learner conceptions**

**Keywords:** Cognitive Skills and Processes, Misconceptions, Pre-service Teachers, Science Education

**Presenting Author:** Mathias Lutz, University of Education Heidelberg, Germany; **Co-Author:** Hendrik Lohse-Bossenz, University Greifswald, Germany; **Co-Author:** Markus Rehm, PH Heidelberg, Germany

The diagnosis of learners' conceptions in chemistry classes and the professional handling of these describe a central task of chemistry teachers. Findings of empirical studies indicate a significant influence of teachers' professional knowledge on the quality of diagnostic judgments. As part of the DiaCoM research college, the present study uses the DiaCoM framework for the theoretical description and empirical survey of diagnostic judgments.

The focus of this research is on the perception and interpretation of learner perceptions of prospective chemistry teachers. The research project is divided into three sub-studies. In the first sub-study, standardized knowledge tests and a vignette test will be used to investigate the influence of chemistry-specific

pedagogical content knowledge (PCK) and chemistry content knowledge (CK) on the quality of the diagnostic judgment. In the second sub-study, a possible influence of professional knowledge on the diagnostic judgments of prospective chemistry teachers is examined by means of an intervention study. For this purpose, three intervention groups are compared with a control group through a targeted manipulation of the knowledge domains of chemical CK and chemical PCK. Finally, in the third part of this thesis, with the help of guided Stimulated Recall interviews, the process of judgment genesis of the intervention participants will be described and compared with each other as well as with the control group. The aim of the study is to investigate the influences of chemical CK and PCK on diagnostic judgments in order to integrate the results into teacher education.

#### **Session B 7**

20 August 2023 13:30 - 15:00

UOM\_R01

Poster Presentation

Assessment and Evaluation, Instructional Design, Teaching and Teacher Education

#### **Assessment and Feedback**

**Keywords:** Achievement, Assessment Methods, Attitudes and Beliefs, Bilingual Education, Classroom Assessment, Cognitive Skills and Processes, Competencies, Computational Thinking, Critical Thinking, Engagement, Feedback, Foreign and Second Language Acquisition, Higher Education, Inquiry Learning, Interest, Large-scale Assessment, Migrant / Refugee and Minority students, Mixed-method Research, Multicultural Education, Pre-service Teachers, Primary Education, Quantitative Methods, Reading, Secondary Education, Self-efficacy, Social Aspects of Learning and Teaching, Social Sciences and Humanities, Teacher Professional Development

**Interest group:** SIG 01 - Assessment and Evaluation, SIG 04 - Higher Education, SIG 11 - Teaching and Teacher Education, SIG 20 - Inquiry Learning

**Chairperson:** Liana Pirovino, Pädagogische Hochschule Zürich, Switzerland

#### **Social Cues in Online Feedback Processes and Their Effects on Non-Cognitive Aspects of Learning**

**Keywords:** Feedback, Higher Education, Pre-service Teachers, Social Aspects of Learning and Teaching

**Presenting Author:**Theresa Ruwe, Humboldt-Universität zu Berlin, Germany; **Co-Author:**Elisabeth Mayweg, Humboldt University of Berlin, Germany

The effectiveness of feedback can be influenced by a variety of factors. Social cues (e.g., feedback providers) as well as non-cognitive aspects (e.g., motivation, emotions, or perceptions) become increasingly important in research around learning (with feedback). Building on this, the outlined project wants to investigate the impact of such social cues on non-cognitive aspects as well as the effectiveness of feedback, determined by cognitive and non-cognitive parts. The poster will outline in more detail the two experimental studies and a systematic literature review comprised in this project. Theoretical as well as practical implications regarding the design of online feedback processes in higher education will be discussed.

#### **The effectiveness of written corrective feedback and its contextual variables**

**Keywords:** Engagement, Feedback, Foreign and Second Language Acquisition, Higher Education

**Presenting Author:**Doris Kristina Raave, University of Tartu, Estonia; **Co-Author:**Anu Treikelder, University of Tartu, Estonia; **Co-Author:**Sara Bédard-Goulet, University of Tartu, Estonia

Despite written corrective feedback's (WCF) prevalence in education, previous research has failed to reach a consensus on WCF's effectiveness as the obtained results have proved incomparable across different samples and research designs. The latter has prompted a swift towards studies on the WCF from questions from what kind of feedback is effective to when and to whom it is effective. In other words, the effectiveness of WCF is increasingly considered based on the context, including situational, methodological, and individual variables. However, knowledge of which context-specific variables seem to be the most prominent in predicting WCF is still limited. To gain further insight into this, the study at hand focused on exploring the relationship between students' agency, regarded as competence, beliefs and motivation, engagement and the effectiveness of WCF. To that end, we ran an exploratory study collecting university students' progress throughout one academic year in an academic writing course in a foreign language and self-reported data on students' agency and engagement. Our results showed a direct link between agency and engagement and engagement and progress but no link between agency and progress. These results suggest that the agency acts as a moderator between engagement and the effectiveness of WCF. The latter is worth further exploration as it could provide practical recommendations for teaching practices.

#### **Assessing Computational Thinking: A Validation and Comparison of Computational Thinking Measures**

**Keywords:** Assessment Methods, Cognitive Skills and Processes, Computational Thinking, Secondary Education

**Presenting Author:**Seppe Hermans, University of Antwerp, Belgium; **Co-Author:**Peter Van Petegem, University of Antwerp, Belgium; **Co-Author:**Francis Wyffels, Ghent University, Belgium

The purpose of this study was to validate and compare several computational thinking (CT) measures that are being used to assess students' CT skills. For this purpose, we constructed an instrument that included self-report measures (i.e., the computational thinking scale, CTS) and cognitive test items (i.e., algorithmic thinking test, abstract thinking test). Confirmatory factor analysis and item response theory were used to investigate the psychometric qualities of our instrument. Additionally, Pearson's correlation analysis was employed to demonstrate both the inter-correlations among all the factors of the computational thinking scale; and the correlations between these factors and the results of the two cognitive tests. Correlation between any of the five variables of the CTS and the cognitive test scores were found insignificant. This means the discriminant validity of the CTS variables was confirmed, but convergent validity between the different measures (i.e., CTS, CT test, Abstract reasoning test) could not be established. Additionally, differences based on gender and study track were identified from comparing the participants' mean scores on all scales. Although these preliminary findings seem interesting, further analysis and interpretation is needed.

#### **Students' assessment of authentic pedagogy when learning to evaluate the trustworthiness of sources**

**Keywords:** Critical Thinking, Inquiry Learning, Interest, Social Sciences and Humanities

**Presenting Author:**Maartje van der Eem, University of Amsterdam, Netherlands; **Co-Author:**J.P. van Drie, University of Amsterdam, Netherlands; **Co-Author:**Saskia Brand-Gruwel, Zuyd, University of Applied Sciences, Netherlands; **Co-Author:**Carla Van Boxtel, University of Amsterdam, Netherlands

In this study, we compared two different approaches to authentic pedagogy in history classrooms where students learned how to evaluate the trustworthiness of sources. In both approaches, students answered the same complex historical questions, using multiple sources. Only the introduction to and the phrasing of these questions differed. In the first approach, the "historical inquiry approach", students were put in the role of historians, and only the historical context was used to introduce the questions. In the second approach, the "present-oriented historical inquiry approach", examples from students' lives and current events were used in the introduction, and students were asked to answer the questions as if they were, for example, judges in a historical trial. Since authentic pedagogy can enhance motivation, it is relevant to investigate how students evaluate these two approaches. A total of 1036 grade 9 students participated, randomized at school level. They filled out a pretest and posttest measuring how interesting, useful, and important they considered learning to evaluate the trustworthiness of sources. In between, they followed three 80-minute lessons. Students evaluated each lesson (scale 1-10) on how interesting and instructive they considered the lesson. Results showed that students in the historical inquiry approach were significantly more positive after two of the three lessons than the students in the present-oriented approach. In both approaches, there was a strong correlation between students' interest and their evaluation of the instructiveness of the lessons. On the posttest, we found no significant difference between the two approaches.

#### **Measuring an Essentially Contested Concept**

**Keywords:** Competencies, Large-scale Assessment, Multicultural Education, Quantitative Methods

**Presenting Author:**Markus Alaffi, University of Uppsala, Sweden

This presentation will discuss an ongoing comparative study that seeks to identify the distribution of aspects related to intercultural competence (IC) in

International Large Scale Assessments (ILSA) produced by OECD and IEA. The study also seeks to specify to what extent the ILSA expresses intercultural competency. To answer the study's research questions, quantitative and qualitative methods are employed. The quantitative content analysis will be supplemented with qualitative text analysis. Furthermore, the quantitative content analyses will be complemented with qualitative texts analysis. The results of the study are of particular interest to the study: the International Education Agency (IEA) 's CIVED 1999 as well as ICCS surveys from the years 2009, 2016, and 2022 (provided that the result of the 2022 study has been published); the OECD PISA studies from 2000, 2003, 2006 2009, 2012, 2015, 2018, 2022. At the conference, I will present the results of the intercultural evaluation of the aforementioned large-scale assessments produced by IEA and OECD. After preliminary reviews of several IEA and OECD reports, the content of ICCS 2009, ICCS 2016, and PISA 2018 relates to the greatest extent to the construct of intercultural competence.

#### **Reading Strategies of majors in Kazakhstan**

**Keywords:** Assessment Methods, Bilingual Education, Higher Education, Reading

**Presenting Author:**Aigul Akhmetova, Pavlodar Pedagogical University, Kazakhstan, Kazakhstan; **Presenting Author:**Suherman Suherman, University of Szeged, Hungary; **Presenting Author:**Ijtihadi Kamilia Amalina, University of Szeged, Doctoral School of Education, Indonesia; **Co-Author:**Gaysha Imambayeva, Innovative Eurasian University, Kazakhstan; **Co-Author:**Benő Csapó, University of Szeged, Hungary

This study focuses on exploring reading strategies of bilingual and monolingual young learners in their first and second languages (L1 and L2) - Kazakh or Russian, and English as a foreign language (FL). Kazakh students demonstrated higher scores of using reading strategies ( $M=35.11\%$ ,  $SD=3.87\%$ ) than Russians ( $M=33.00\%$ ,  $SD=3.54\%$ ). The average of the factors in our current study pointed a higher score for Kazakh students and medium for Russians while reading academic, and/or school related materials. However, it was interesting that the significant correlation among Kazakh students found only between global and support strategies ( $r=.755$ ,  $p$

#### **Teachers attitudes towards classroom assessment - Constructing and testing an instrument**

**Keywords:** Attitudes and Beliefs, Classroom Assessment, Quantitative Methods, Teacher Professional Development

**Presenting Author:**Isabel Berger, University of Leipzig, Germany; **Co-Author:**Brigitte Latzko, University of Leipzig, Germany; **Co-Author:**Katrin Gottlieb, University Leipzig, Germany

Following Ajzens (1991) Theory of Planned Behavior teachers' attitudes influence their intentions to act and their behavior regarding assessment practices. In order to ensure that preservice teachers develop a professional attitude towards assessment, there must also be possibilities to assess this attitude. To date, there has been little German research on this topic and therefore only few instruments and data. This poster presents the development of a questionnaire that aims to map the cognitive and affective attitudes, subjective norms, and self-efficacy of preservice teachers toward assessment. On the basis of international Instruments (Brown, 2006; Watson et al., 1988; Yan & Cheng, 2015) a questionnaire consisting of 66 statement-items was developed and tested with a sample of  $N = 145/ N = 70$  teacher students using a 5-point Likert-scale. As the assumed factor structure could not be replicated, an exploratory factor analysis was used to identify the content dimensions preservice teachers attitudes towards assessment. The interpretations of these results will be thematized. Considerations regarding validity and reliability of the instrument, interpretation of the identified factors and implications for teacher education programs will be discussed.

#### **Inclusive admission: Adverse impact and predictive bias of various university admission instruments**

**Keywords:** Achievement, Assessment Methods, Higher Education, Migrant / Refugee and Minority students

**Presenting Author:**Pieter van Lamoen, Erasmus University Rotterdam, the Netherlands, Netherlands; **Co-Author:**Annemarie Hiemstra, Erasmus University Rotterdam, Netherlands; **Co-Author:**Marieke Meeuwisse, Erasmus University Rotterdam, Netherlands; **Co-Author:**Arends Lidia, Erasmus University Rotterdam, Netherlands; **Co-Author:**Sabne Severiens, Erasmus University Rotterdam, Netherlands

Good admission procedures show good predictive validity (admission results are related to relevant outcomes) and are fair (no adverse impact against minorities). Research shows that traditionally used selection instruments, such as prior academic achievement, tend to adversely impact students with an ethnic minority background. In our study, we examined two ways that potentially reduces ethnic-based adverse impact in higher education (HE) admission procedures: non-cognitive assessments and a curriculum-sample test. Using data obtained from students ( $n = 338$ ) in an actual high-stakes HE admission procedure, our study showed that assessments of motivation as a noncognitive indicator and a curriculum-sample test both reduced adverse impact caused by assessment of prior academic achievement. Analyses of predictive validity indicated that pre-university-GPA and the curriculum-sample test are valid predictors of academic success, in terms of course grades and study progress. The assessments of motivation are not related to academic success, however. We conclude that curriculum-sample tests are a promising method to reduce ethnic-based adverse impact of HE admission procedures, while maintaining good predictive validity.

#### **The Italian evaluation reform tries to change teaching methods: can professional development help?**

**Keywords:** Attitudes and Beliefs, Mixed-method Research, Primary Education, Self-efficacy

**Presenting Author:**Laura Landi, Università di Modena e Reggio Emilia, Italy

This research takes the lead from the change in Italian primary school evaluation system, initiated during the 2020-21 school year. The system changed from a 0-10 grade scale to a criterion-based evaluation (Ebel, Frisbie, 1965), with 4 levels based on 4 dimensions: autonomy, use of resources, known and unknown context and continuity. Widely unprepared schools reached out to university for professional development modules that could help them in the transition. This created the condition for a mixed-methods research aiming at investigating two main areas: on one hand how teacher's habitus and preconceived ideas of teaching and learning shape their idea of evaluation, self-efficacy, and their willingness to welcome change; on the other hand, what type of professional development, institutional culture and community of practice can support systemic change (Barnes in Russel & Mumby (eds.), 1992). Teachers work in the context of a school and a teaching group, with its own history and culture. These elements along with training methodologies and format can help or undermine changes introduced by legislation, therefore each institution represents a case study. This poster will present data from surveys, training field notes, focus groups, documentation designed by teachers, in-depth interviews to provide elements of good practice in the training and shade some light on why OM172 has produced different effects in different realities.

#### **Session B 8**

20 August 2023 13:30 - 15:00

UOM\_R05

Roundtable

Educational Policy and Systems, Instructional Design, Learning and Social Interaction

#### **Teaching Practices**

**Keywords:** Citizenship Education, Cognitive Skills and Processes, Cultural Diversity in School, Developmental Processes, Educational Policy, Eye Tracking, Instructional Design, Mixed-method Research, Peer Interaction, Secondary Education, Social Aspects of Learning and Teaching, Social Sciences and Humanities, Teaching/Instructional Strategies, Video-based Learning

**Interest group:** SIG 10 - Social Interaction in Learning and Instruction, SIG 11 - Teaching and Teacher Education, SIG 13 - Moral and Democratic Education

**Chairperson:** Xiaoshan Huang, McGill University, Canada

#### **Developing scripted videos for teacher education: A design-methods review for "best-practice" tips**

**Keywords:** Developmental Processes, Instructional Design, Teaching/Instructional Strategies, Video-based Learning

**Presenting Author:**Meg Farrell, Technische Universität München, Germany; **Co-Author:**Kristin Moyer, Technical University of Munich, TUM School of Education, Germany; **Co-Author:**Tina Seidel, Technische Universität München, Germany

Videos are used in teacher education for various learning aims (e.g., modeling, video analysis, assessment), often as authentic recordings of real classroom

situations. Scripted videos can also be useful instructional material, especially when well-developed. However, this process is more complex than recording teaching in real time, thus its popularity has recently declined. Yet within the progression of new learning technologies, (preservice) teachers might be missing out on the benefits of effective learning tools. Scripted videos have the instructional advantage of depicting learning content as condensed and simplified, making difficult-to-notice events more salient, or depicting events that are rare to capture authentically. Providing a guideline to enhance the direction and quality assurance of scripted video could be valuable in the educational field. But evidence-based guides are scarce. Thus, the aim of this systematic review is to summarize existing literature's best practices regarding the methodological elements involved in development and production of scripted video. In our study, we systematically identified 128 articles using scripted video in the teacher education context. Further evaluation of the methodological reporting quality will determine the final study sample. Coding will involve key considerations from two helpful frameworks for video development to extract information on theoretical guiding principles, video use goals/aims, script development, production, implementation, and video validity checks. We intend to categorize findings according to each step of the video development process. Our results will contribute to research and practice in teacher education by offering insights into best-practice methodological tips for creating high-quality, evidence-based scripted videos.

#### **Teacher Practices Shape Classrooms as Practice Grounds for Democracy: Does Diversity Matter?**

**Keywords:** Citizenship Education, Cultural Diversity in School, Peer Interaction, Social Aspects of Learning and Teaching

**Presenting Author:**Minke Krijnen, Leiden University, Netherlands; **Co-Author:**Bjorn Wansink, Utrecht University, Netherlands; **Co-Author:**Jan van Tartwijk, Utrecht University, Netherlands; **Co-Author:**Tim Mainhard, Leiden University, Netherlands

The elementary classroom can be considered as a practice ground for democracy, where daily experiences with peers reflect and contribute to democratic citizenship learning. Here, children can learn to engage with others in a peaceful and democratic way, which ultimately may contribute to sustaining increasingly diverse democratic societies. This perspective of enacted or lived citizenship asks for researching democratic citizenship learning beyond solely focusing on individual development and effects of teaching the formal curriculum. The current study investigates how teachers shape this practice ground via daily teaching practices in diverse classrooms. Children's observations of peers' behaviors (i.e., listening, cooperation, conflict resolution, involving others, aggression and engaging in positive relationships) were assessed via peer nominations to consider the context-dependent and relational nature of children's citizenship. Teacher practices were assessed by multi-informant measures of support and conflict. Classroom diversity was measured by indicators for migration history and socioeconomic background, to test whether the association between teacher practices and democratic citizenship outcomes is dependent on classroom diversity. Preliminary analyses revealed that peer-perceived support is positively associated with democratic citizenship behavior at the level of the classroom, whereas peer-perceived and self-reports of teacher conflict was associated with more aggression. These results indicate that children actively observe teachers' implicit democratic practices and that this can affect how children interact with each other as democratic citizens in the classroom. The roundtable discussion aims to discuss explanations for the role of classroom diversity for the way teacher practices can shape the classroom as practice ground for democracy.

#### **Teaching Visual Problem Solving**

**Keywords:** Cognitive Skills and Processes, Eye Tracking, Social Sciences and Humanities, Teaching/Instructional Strategies

**Presenting Author:**Christine van Nooijen, Erasmus University Rotterdam, Netherlands

Visual problem-solving is a critical 21st-century skill in various domains, including the social sciences. It is often developed in expert-novice interaction. Differences between experts and novices have been identified in a variety of domains, such as (but not limited to) sports and game domains like soccer and chess, and vocational domains spanning from air traffic control to surgery. Yet the process by which this expertise is transferred to novices is still understudied. This project aims to investigate verbal and non-verbal expert-novice interactions to uncover effective practices for developing this skill in complex visual tasks in the social sciences domain; specifically, forensic criminology. We record expert-novice interactions to study which scaffolding strategies experts in visual problem-solving use to diagnose and assist the novice's learning process, with a focus on the use of cueing and chunking strategies. Cueing strategies are perceptual; attention is guided to a specific point, influencing attention allocation. Chunking strategies are cognitive; concepts are grouped together to show relations between and within the information. These scaffolding strategies may manifest in both verbal and nonverbal behaviours. We use mobile eye-tracking, audio and video recording to study the effects of these actions on novices' visual perception, attention allocation and performance. By understanding which cueing and chunking strategies are used, and how, we hope to improve our understanding of expertise transfer. This understanding will allow us to develop instructional and scaffolding interventions to assist novices in gaining confidence and proficiency in visual problem-solving faster, and experts in optimally transferring their knowledge.

#### **Shadow education in Dutch secondary education and its impact on the publicness of education**

**Keywords:** Educational Policy, Mixed-method Research, Secondary Education, Teaching/Instructional Strategies

**Presenting Author:**Nynke Douma, University of Groningen, Netherlands; **Co-Author:**Matthijs Warrens, Rijksuniversiteit Groningen, Netherlands; **Co-Author:**Anouk Zuurmond, Rijksuniversiteit Groningen, Netherlands

Shadow education has recently expanded considerably, and has become increasingly intertwined with public education. There is a lack of insight into shadow education and its impact in the Netherlands: The extent and forms of shadow education have hardly been studied and the Dutch government lacks a clear, coherent view on the publicness of education and the impact of shadow education on the publicness of schools. We need a public deliberation to come to a shared understanding of publicness, and to decide which 'public' characteristics of education we wish to retain in light of increasing shadow education. As part of a PhD project about the impact of shadow education, this study aims to analyze to what extent shadow education is diminishing the publicness of Dutch secondary education. The analysis of this study is based on empirical data collected in a previous study, consisting of interviews with school teams and surveys of pupils and their parents to question their awareness, use and opinion of shadow education. Theoretical standards as made by Waslander (2021) are then utilized to assess the extent to which publicness might be infringed upon by the forms of shadow education in secondary education that were established in the empirical study.

Discussion questions may address: The extent of insight into shadow education and experiences with public deliberation on shadow education across contexts Potential normative frameworks to assess the public character of schools and education Decision-making surrounding shadow education: levels of decision making, opportunities and pitfalls

#### **Session B 9**

20 August 2023 13:30 - 15:00

UOM\_A10

Roundtable

Cognitive Science, Lifelong Learning, Motivational, Social and Affective Processes

#### **Self-regulated Learning**

**Keywords:** Competencies, Higher Education, Inclusive Education, Instructional Design, Large-scale Assessment, Lifelong Learning, Metacognition, Motivation, Primary Education, Quantitative Methods, Self-efficacy, Self-regulated Learning and Behaviour, Teacher Effectiveness

**Interest group:** SIG 08 - Motivation and Emotion, SIG 16 - Metacognition and Self-Regulated Learning

**Chairperson:** Maria Fernanda Esqueda Villegas, University of Groningen, Netherlands

#### **How do students regulate their motivation across a Bachelor course? An intraindividual approach**

**Keywords:** Higher Education, Motivation, Quantitative Methods, Self-regulated Learning and Behaviour

**Presenting Author:**Linda Zenger, University Utrecht, Netherlands; **Co-Author:**Barbara Flunger, Utrecht University, Netherlands; **Co-Author:**Tamara Van Gog, Utrecht University, Netherlands

University students often lack motivation to study. This is problematic because motivation is a key predictor of academic achievement. Therefore, it is important to identify strategies to boost motivation. When students cannot rely on motivational support from others (e.g., teachers, peers), they can apply motivation

regulation strategies to enhance their motivation. Motivation regulation has been found to be positively associated with effort and achievement, and negatively with procrastination and dropout intentions. Motivation regulation has mainly been considered as an aspect of Self-Regulated Learning and effective strategies have been identified based on SRL research, expectancy-value theory, and achievement goal theory. However, research on Self-Determination Theory has highlighted several strategies that can promote motivation which could also be used as self-motivating strategies, such as displaying patience and acknowledging frustration. Considering additional strategies could complement existing inventories and help to identify which strategies are most effective in improving academic outcomes. Additionally, most research on motivation regulation is cross-sectional and cannot uncover whether motivation regulation indeed drives academic outcomes. Specifically, prior research mostly studied motivation regulation as a trait-like characteristic that is stable across time and situations. However, motivation regulation may be situation-specific, implying that students may use different strategies when preparing an exam or writing an essay. Therefore, this study follows university students' motivation regulation during a course, considering several new motivation regulation strategies. The following research questions are studied: (1) How do students regulate their motivation over time and across tasks? (2) How is motivation regulation over time associated with academic outcomes?

#### **Longitudinal connections between students' self-efficacy in self-regulation and strengths**

**Keywords:** Inclusive Education, Quantitative Methods, Self-efficacy, Self-regulated Learning and Behaviour

**Presenting Author:**Minna Ikävalko, University of Eastern Finland, Finland; **Co-Author:**Erkko Sointu, University of Eastern Finland, Finland; **Co-Author:**Jaana Viljaranta, University of Eastern Finland, Finland; **Co-Author:**Matthew Lambert, University of Nebraska-Lincoln, United States

Students' ability to regulate and assess their behaviors, emotions and thinking are essential in comprehensive school, but also, operating in the knowledge society (Anderson, 2008). More precisely, students' perceptions of their own abilities to regulate and assess are significant to examine as they may influence more than actual skills (Bandura, 1997). Different environmental sources such as, sources of self-efficacy in self-regulation (Paananen et al., 2019; Peura et al., 2021) and behavioural and emotional strengths (Lappalainen et al., 2014, 2020; Sointu et al., 2017) have been found to play a critical role in students' learning, academic performance, and behaviour. These two constructs are conceptually close to each other (Bandura, 1997) and are found to be connected empirically with cross sectional data (Ikävalko et al., 2022). In this study we examine the connections between 9–16-year-old students' (N= 372) self-perceptions from sources of self-efficacy in self-regulation and behavioural and emotional strengths with longitudinal data. Data are analysed with cross-lagged panel model, to understand the connections of these constructs over time among primary and lower secondary school students. Results will be presented in the round table.

#### **An intervention for NEETs to support their continuation of the learning path.**

**Keywords:** Competencies, Instructional Design, Lifelong Learning, Self-regulated Learning and Behaviour

**Presenting Author:**Kerli Kõiv, University of Tartu, Institute of Educational Science, Estonia; **Co-Author:**Katrin Saks, University of Tartu, Estonia

In the 21<sup>st</sup> century people need to be prepared to be lifelong learners who commit themselves to new developments with any field and adapting quickly to changes. Rising flexibility in education and employment requires better self-direction skills. While educational institutions offer mostly for students the development of various competencies, there are no targeted interventions in society that support the growth of the skills, including self-directed learning (SDL) skills of young people who have already dropped out from school. There are growing rates of young people who are not in education or in employment (NEET-youth). Their skills to continue their learning path are low. To address this gap, the aim of this study is to create an intervention program to support NEET youth's SDL skills and bring them back to lifelong learning. The research is grounded on the theoretical framework of SDL and previous practices of developing the SDL skills. The study provides the findings of a literature review on applied methods, the design of an intervention plan and piloting process.

#### **Metacognition and the Transition into Subject-Based Teaching in Polish Primary Schools**

**Keywords:** Large-scale Assessment, Metacognition, Primary Education, Teacher Effectiveness

**Presenting Author:**Julia Mier, University of Warsaw, Poland

Over 70% of elementary school pupils transitioning into subject-based teaching in Poland (at age 9-10 yrs old) report difficulties. School transitions involve social and academic changes and require increased: emotional endurance, organisational skills, learning and reasoning capacity. Polish literature specifically emphasises academic stress related to starting subject-based learning e.g. inability to intellectually cope with the workload or not knowing 'how and 'what' to learn. Metacognition (thinking about thinking) is often stated as a key cognitive ability in education. Metacognition is significantly developing at the age of transitioning into subject-based teaching. Metacognition can be measured both offline and online through i.a. self-report questionnaires, cognitive tasks and interviews. Researchers state simultaneous use of different tools is most appropriate. Using a combination of 3 different methods: a self-report questionnaire, used for fast screening of metacognitive levels called the MAI (Metacognitive Awareness Inventory) and Jr. MAI (for ages 9-15yrs); a gamified metacognitive task; and an evaluation survey of early-year programme form teachers' teaching methods. I plan to conduct a large scale screening of metacognition in children attending the 3rd grade of Polish elementary schools (pupils from approximately 20 classes; aged 9-10); to identify interpersonal differences; identify the relationship between teaching strategies plus metacognition levels in teachers relative to those of their pupils at a class level.

### **Session C 1**

20 August 2023 15:30 - 17:00

UOM\_A11

Invited Symposium

Learning and Social Interaction

#### **On the frontline of online measures: Exploring learning processes with multimodal data**

**Keywords:** Anxiety and Stress, Classroom Assessment, Cognitive Skills and Processes, Comprehension of Text and Graphics, Cooperative/Collaborative Learning, Emotion and Affect, Feedback, Knowledge Construction, Mixed-method Research, Motivation, Self-regulated Learning and Behaviour, Writing/Literacy

**Interest group:** SIG 27 - Online Measures of Learning Processes

**Chairperson:** Tiina Susanna Törmänen, University of Oulu, Finland

**Organiser:** Tiina Susanna Törmänen, University of Oulu, Finland

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

**Discussant:** Julia Morinaj, University of Bern, Switzerland

To better understand and improve learning and assessment, in addition to learning outcomes, it is important to explore the "whys" and "hows" on the route leading to these outcomes. Online measures, such as physiological data, eye-tracking, and observational methods, offer a way to capture processes and activities continuously during the learning tasks. Thus, they have potential to increase our understanding of learners' cognitive, motivational, and emotional processes intertwined in and playing a role for the learning process. This SIG 27 invited symposium brings together four junior researchers working on the frontline of online measures and novel methodologies. In this symposium, we aim to showcase the potential of utilizing new technologies and multimodal data in studying learning and assessment processes in both individual (Jheng et al.; Ismail et al.; Pinedo et al.) and group (Zabolotna et al.) learning contexts. On one hand, the studies focus on revealing learners' cognitive processes through various combinations of multimodal data: metacognitive monitoring and knowledge construction in small group interactions (Zabolotna et al.), students' risk perception and text comprehension in relation to different text genres (Jheng et al.), and students' self-assessment and use of feedback in essay writing (Pinedo et al.). On the other hand, the studies seek to unravel students' emotional arousal (Jheng et al.), motivation, and stress (Ismail et al.) through different physiological data sources. Together, we will discuss the potential and challenges of online measures and multimodal data in studying learning and assessment processes.

#### **Combining electrodermal activity with self-report measures to unravel text genre effects**

**Presenting Author:**Yi-Lun Jheng, University of Antwerp, Belgium; **Co-Author:**Leen Catrysse, Open Universiteit, Department of Online Learning and Instruction, Belgium; **Co-Author:**Sander Van de Cruys, University of Antwerp, Belgium; **Co-Author:**Karolien Poels, University of Antwerp, Belgium; **Co-**

**Author:**David Gijbels, University of Antwerp, Belgium

Learning from texts is a crucial skill in our current society as important information is often conveyed via text. Therefore, it is important to gain more insights into how texts can engage readers in order to facilitate comprehension. This study examines how texts can create awareness and increase knowledge about health risks people are unaware of. The focus is on how text genre (narrative, expository, and mixed-genre) affects emotional (arousal) and cognitive outcomes (knowledge and risk severity), measured using both online (electrodermal activity) and offline measures (self-reports). Fifty-four Dutch-fluent undergraduate students were recruited to participate in a laboratory experiment in which they had to read about unknown environmental hazards in three different text genres. Mixed-effects models revealed that narrative text genres exhibit the highest self-reported arousal and risk severity. Additionally, mixed-genre texts produced significantly higher arousal peaks (EDA) and confidence ratings on knowledge post-tests compared to expository texts. Taken together, the findings suggest that narrative texts perform better at raising awareness, whereas mixed-genre texts seem more effective for learning.

#### **Exploring collaborative learning processes in group interactions through the lens of multimodality**

**Presenting Author:**Kateryna Zabolotna, University of Oulu, Finland, Finland; **Co-Author:**Jonna Malmberg, University of Oulu, Finland; **Co-Author:**Daniel Spikol, University of Copenhagen, Denmark; **Co-Author:**Emma Lehtoaho, University of Oulu, Finland

Dialogue is an integral part of collaborative learning (CL) as it is through conversation that group members can reach a shared understanding. Conversation is also a primary data source to identify how students engage in different learning processes. The present study explores the potential of speech as a data channel for identifying joint metacognitive monitoring (MCM) and collaborative knowledge construction (CKC). This is done by combining traditional qualitative video coding with speech recognition methods based on machine learning. The participants were 21 9th-graders from a local international school recruited to participate in a pilot data collection. Their task was to build and program a robotic arm working in groups of two to three. Their collaboration was video- and audio- recorded and further coded for MCM and CKC events. Speaker diarization is applied to identify speakers' participation in joint MCM; machine learning is applied to identify speech synchronization between speakers during CKC. The results provide insights into how learners engage in MCM and CKC in collaborative learning and visualize how traditional qualitative video coding can be combined with automated speech recognition methods for a more holistic view on collaborative learning processes. As this study is in progress, the results and implications for theory and practice will be discussed in more detail during the conference.

#### **CXL: Informing Educational Methods using Physiological Correlates of Self-Reported Motivation&Stress**

**Presenting Author:**Abdul Karim Ismail, University of Oxford, United Kingdom; **Co-Author:**Lars-Erik Malmberg, University of Oxford, United Kingdom; **Co-Author:**Sonali Nag, University of Oxford, United Kingdom

This presentation has been cancelled and will not be presented at JURE 2023.

Motivation and stress are psychological states that affect learning experiences, and have heretofore primarily been evaluated using self-report questionnaires. Questionnaires suffer cognitive biases and low sampling frequency. Though recent studies have measured physiological responses to psychological stress states, these measurements are not specific to particular psychological states, nor have they been used to evaluate teaching and feedback methods.

To address these limitations, in this study, specific psychological states pertaining to motivation and stress are correlated with physiological parameters. These physiological parameters are autonomic stress, emotional valence, cognitive workload and neurological focus, which are extracted using electroencephalography (EEG), heart-rate variability (HRV), and photoplethysmography (PPG).

In an experimental setup, intraindividual changes in these parameters are recorded relative to two sets of experimental conditions: either manipulations to the teaching method, or feedback method. A randomised controlled crossover experimental design is employed for each set, with each set containing four experimental conditions.

An assessment outcome variable in both sets is evaluated alongside the physiological parameters. After each manipulation in experimental condition, participants also complete a self-report questionnaire on their psychological state relative to that experimental condition, which is analysed against the physiological data. This process informs validity, and contributes to the evidence relating to particular teaching or feedback experimental conditions.

#### **Exploring students' self-assessment and external feedback through eye-tracking and self-report data**

**Presenting Author:**Leire Pinedo, Universidad de Deusto, Spain; **Co-Author:**Ernesto Panadero, Universidad Deusto, Spain; **Co-Author:**Pablo Delgado, University of Sevilla, Spain; **Co-Author:**Fernando Diez, Universidad de Deusto, Spain; **Co-Author:**Maite Aurrekoetxe, University of Deusto, Spain

Evidence has shown the importance of self-assessment for developing self-regulation and enhancing academic performance. Over the years, a large number of studies have been carried out on the accuracy and the effects of self-assessment on academic performance. However, the latest research is focusing on understanding how students generate their own self-feedback with different types of external feedback. This study aims to provide a more-in-depth understanding of the self-assessment process through examining students' processing of their own text and external feedback using eye-tracking technology, concurrent think aloud protocols and questionnaires. Our sample included third- and fourth-year university participants. Eye movement data were compared between high and low academic performance groups and self-assessment profiles. The study is in progress, differences in the mentioned variables will be reported during the conference. Implications for educational practice and research will be discussed.

## **Session C 2**

20 August 2023 15:30 - 17:00

UOM\_A05

Single Paper

Assessment and Evaluation, Higher Education

### **Doctoral Education**

**Keywords:** Anxiety and Stress, Doctoral Education, Engagement, Higher Education, Informal Learning, Qualitative Methods, Quantitative Methods, Researcher Education, Self-efficacy, Well-being, Writing/Literacy

**Interest group:** SIG 01 - Assessment and Evaluation, SIG 04 - Higher Education, SIG 24 - Researcher Education and Careers

**Chairperson:** Clara Kuhn, University of Salzburg, Austria

### **Validation and investigation of a questionnaire: PhD students' English academic writing abilities**

**Keywords:** Doctoral Education, Quantitative Methods, Self-efficacy, Writing/Literacy

**Presenting Author:**Wai Phyo, University of Szeged, Myanmar; **Co-Author:**Marianne Nikolov, University of Pecs, Hungary; **Co-Author:**Agnés Hodi, University of Szeged, Hungary

Research students of PhD program requires a good command of academic English writing proficiency to establish academic careers and to graduate. The aim of our current study is to investigate the reliability and validity of our developed questionnaire whose purpose was to examine the relationship between Academic Literacy Background (ALB), Academic English Writing Proficiency at the start of the PhD program (AEWS), academic English reading ability now (AERN), academic English writing ability now (AEWN). The items in the questionnaire were adapted and modified from Dong (1998) and CEFR (2018). The developed questionnaire using 1 to 6 Likert scale was distributed in Hungary in the fall of 2022 and all the doctoral students who came from non-English speaking backgrounds were invited. A total of 255 (125 females; 127 males; 3 not stated) doctoral students studying at 14 different universities in Hungary participated and a large number of students provided us with their email addresses for follow-up interviews. The participants represented 49 countries and 52 mother tongues. Reliability analysis showed that the questionnaire was highly reliable ( $\alpha = .846$ ). According to Pearson correlation analyses, the items of the questionnaire were valid ( $p < 0.01$ ). A simple regression was conducted to predict student writing ability from their academic literacy background, their writing ability at the start of the PhD program and their current academic reading ability. It was found that the predictors explained a significant amount of students' current English academic writing ability,  $F(3, 251) = 211.868, p = 0.000, R^2 = .717, R^2 \text{ adjusted} = .714$ .

### **Validation and investigation of a questionnaire: PhD students' research skills and writing abilities**

**Keywords:** Doctoral Education, Higher Education, Qualitative Methods, Self-efficacy

**Presenting Author:**Wai Phyo, University of Szeged, Myanmar; **Co-Author:**Marianne Nikolov, University of Pecs, Hungary; **Co-Author:**Agnes Hodi, University of Szeged, Hungary

Doctoral students are expected to design, conduct, and analyze research independently. In PhD programs conducted in English, they have to read the literature and submit their dissertations in English. We developed a questionnaire using 1 to 6 Likert scale to investigate how students came from non-native English-speaking backgrounds self-assessed their abilities in research and English academic tasks. The questionnaire consisted of 29 self-assessed statements based on four dimensions: research skills at the start of their PhD and at the current point of their studies (target construct), and English academic reading comprehension and writing abilities. The aim of the study is to investigate the reliability and validity of the questionnaire and to develop a model of the three predictor constructs and the target construct. The questionnaire was conducted in Hungary in the fall of 2022. A total of 255 doctoral students participated in it and a large number of them provided us with their email addresses for follow-up interviews. Reliability analysis showed that the questionnaire was reliable: the value of Cronbach's Alpha is  $(\alpha) = .963$ . Pearson correlation analyses were performed to examine the construct validity of the items in the questionnaire and the results confirmed validity ( $p < 0.01$ ). A simple regression was conducted to predict students' self-perceived research abilities from their self-assessed research abilities background, their self-perceived English academic reading and writing ability. The predictors explained a significant amount of students' current self-assessed research abilities,  $F(3, 251) = 222.068$ ,  $p = 0.000$ ,  $R^2 = .726$ ,  $R^2_{\text{adjusted}} = .723$ .

### **Research Time Investment of Young Faculty in Chinese Research Universities: A Qualitative Study**

**Keywords:** Anxiety and Stress, Informal Learning, Qualitative Methods, Researcher Education

**Presenting Author:**Anding Shi, University of Oxford, United Kingdom

Over the past few decades, university faculty's increased time spent on research, accelerated pace of academic work and the consequent work-related stress have raised concerns. While some studies have adopted quantitative methods to reveal their working conditions through the lens of time allocation (Anderson & Slade, 2016; Bentley & Kyvik, 2013), few use qualitative methods and focus on a particular group of young faculty, who are usually facing intense competition for academic positions and the dilemma of balancing personal and professional commitments. This study therefore used a research university in China as a case study, interviewed nine young faculty members and tried to provide an in-depth understanding of their current research time investment and its mechanism. The finding shows that Young Chinese faculty are usually facing insufficient and fragmented research time, and they often sacrifice family and personal time for their research. Excessive administrative work resulting from the institution's improper arrangement is often the main cause. Besides, the family responsibility of caring for young children and the inconvenience of refusing unimportant work in a culture of high respect for seniors also add to the strain on their research time. Finally, young faculty' attitudes and strategies towards academic work also influence the time they devote to research and other professional duties. Overall, this study combines both structural and individual perspectives to shed light on the working conditions of young faculty, it also extends our knowledge of the similarities and differences in the academic environment for young faculty in China and other countries.

### **Value of the PhD within and beyond academia: characteristics of work conditions and job satisfaction**

**Keywords:** Doctoral Education, Engagement, Quantitative Methods, Well-being

**Presenting Author:**Marina García-Morante, Blanquerna, Universitat Ramon Llull, Spain; **Co-Author:**Anna Sala Bubaré, Ramon Llull University, Spain; **Co-Author:**Montserrat Castelló, Ramon Llull University, Spain

Is it possible to have a fulfilling career outside academia? The last decades have seen an exponential increase in the number of PhDs in OECD countries. Doctoral careers are more diverse and fluid than ever before, especially those beyond academia. However, literature on differences in job satisfaction and working conditions between academic and non-academic PhD holders remains scarce. The present study explores differences in doctoral working conditions, job satisfaction, and the impact of doctoral degrees across sectors. We have used secondary data provided by the Agency for the Quality of the University System in Catalonia (AQU), which comprises 1798 recent PhD graduates from diverse disciplines and sectors. In order to identify the differences among job sectors, we conducted statistical tests to compare the answers of the three participants' groups: those employed in universities, research institutes, and companies. Results show that PhD is not valued beyond academia, and surprisingly neither is required for almost half of the PhDs working in academia and research institutes. However, there is a clear mismatch between degree requirements and the level of responsibilities they perform. Regarding satisfaction, PhD holders are differently satisfied with current job aspects, but there are no differences between sectors in satisfaction with job content and overall satisfaction. PhD impact on the current job is minor for those working in companies in terms of contract, salary, and new responsibilities assumption. Results challenge the popular belief of "failed academic careers" and shed light on non-traditional PhD careers.

### **Session C 3**

20 August 2023 15:30 - 17:00

UOM\_A06

Single Paper

Higher Education, Learning and Instructional Technology, Motivational, Social and Affective Processes

### **Motivation and Self-determination**

**Keywords:** Attitudes and Beliefs, Doctoral Education, Engagement, Inclusive Education, Learning Analytics, Learning Strategies, Motivation, Primary Education, Qualitative Methods, Quantitative Methods, Secondary Education, Self-determination

**Interest group:** SIG 04 - Higher Education, SIG 08 - Motivation and Emotion, SIG 16 - Metacognition and Self-Regulated Learning

**Chairperson:** Mareike Brehmer, University of Agder, Norway

### **Students enacted SRL strategies in a writing task – insights from digital trace data and interviews**

**Keywords:** Learning Analytics, Learning Strategies, Qualitative Methods, Secondary Education

**Presenting Author:**Olli Aksela, University of Oulu, Finland; **Co-Author:**Joni Lämsä, University of Oulu, Finland; **Co-Author:**Sanna Järvelä, University of Oulu, Finland

Self-regulated learning (SRL) theory defines learning as a goal-oriented process in which students make conscious, strategic choices while working toward learning goals (Winne, 2015). Measuring these complex SRL processes has been a major challenge in the field of learning sciences. Recently, advancements in intelligent learning technologies have brought novel opportunities to enable real-time measurement of SRL processes. (Järvelä & Bannert, 2021) In this study, the 13–15-year-old students worked individually with an Artificial Intelligence -content related essay task in a digital learning environment. The SRL processes were captured by trace data ( $N = 50$ , navigational log, mouse, and keyboard data) and were supplemented with screen-capture recordings that were used in cued retrospective interviews ( $n=18$ ). Trace data were analyzed by implementing an existing, theory-based action library which automatically detects SRL processes from the trace data (Fan et al., 2022). The retrospective interviews were used to shed light on the cognitive and metacognitive strategies of the students related to different phases during the task. Preliminary results from the pilot data ( $N=2$ ) show that the retrospective interviews validated and complemented the students' cognitive and metacognitive processes and larger-scale strategies which could be identified from the trace data. The complete results will be reported at the conference.

### **The role of self-system processes in engagement and school attendance**

**Keywords:** Engagement, Primary Education, Secondary Education, Self-determination

**Presenting Author:**Suvi Kanerva, University of Helsinki, Finland

This unfinished paper explores the phenomenon of school attendance through the framework of the self-system model of motivational development (see Connell

& Wellborn, 1991; Skinner et al., 2008). The aim of this paper is to test the hypothesis that the self-system processes affect students' attendance through the internal dynamics of engagement. Participants (N=45,000) in the study come from a large-scale nationally representative research project called Schooling, teaching, and well-being in the school community during the COVID-19 pandemic. Data consist of students' self-reported survey answers. The methods in this study are quantitative and based on multivariate analyses. Structural equation model is used in a confirmatory approach to test the hypothesis. Preliminary analyses show that the variables form reliable and valid sum variables which can be used in further analyses. If the results confirm the hypothesis, this paper enforces the role of self-system processes, like autonomy, competence and relatedness, in schools. This paper is a part of my doctoral dissertation.

#### **Dropout intention in doctoral studies: A self-determination theory approach**

**Keywords:** Doctoral Education, Motivation, Quantitative Methods, Self-determination

**Presenting Author:**Christina Schoina, Aristotle University of Thessaloniki, Greece; **Co-Author:**Eleftheria Gonida, Aristotle University of Thessaloniki, Greece; **Co-Author:**Kioseoglou Grigoris, Aristotle University of Thessaloniki, Greece

The present study aimed to examine dropout intentions in PhD studies through the lens of Self Determination Theory (SDT). A sample of 140 doctoral students were asked to complete an online study. The study included (i) self-report scales measuring need support and need thwart by the advisor, the family and the classmates, perceived competence and autonomy, autonomous and controlled motivation and intention to dropout, (ii) eight vignettes designed specifically to measure intention to dropout in relation to SDT variables, (iii) demographic variables. Preliminary analyses showed significant differences in relation to students' gender, age, field of studies, and scholarship support. Path analysis indicated advisor's need support and thwart, family's need thwart, perceived competence and perceived autonomy as important predictors of doctoral students' dropout intentions. Further, analyses of variance applied on the vignettes indicated (i) the importance of need support by the advisor and of autonomous motivation and perceived competence for decreasing the intention to drop out, and (ii) that both need thwart by the advisor and controlled motivation are related to increased intention to dropout. The results of the study are discussed in light of current literature, while limitations, implications and future research are pointed out.

#### **Teachers' Differential Need Support: Students' Socioeconomic Status and Teachers' Prejudice**

**Keywords:** Attitudes and Beliefs, Inclusive Education, Primary Education, Self-determination

**Presenting Author:**Jonne Bloem, Utrecht University, Netherlands; **Co-Author:**Barbara Flunger, Utrecht University, Netherlands; **Co-Author:**Kim Stroet, Leiden University, Netherlands; **Co-Author:**Lisette Hornstra, Utrecht University, Netherlands

Providing differential support for students' psychological needs for autonomy, competence, and relatedness depending on their socioeconomic family background (SES) may perpetuate educational inequalities, starting at an early age. Therefore, we scrutinized whether primary school teachers provide different levels of need support to students with different SES. Teachers' behaviors toward students with different SES may depend on their attitudes toward low-SES students; therefore we also examined whether differences in need support for low- and high-SES students were stronger when teachers were more prejudiced against low-SES students. Accordingly, we conducted two studies: Study 1 was an experimental vignette study with the vignettes presenting either a fictional low- or high-SES student. Study 2 was a field study asking teachers to report on their need support toward a low- and high-SES student from their class, also rating the gender, perceived academic ability and classroom behavior of these students. Explicit and implicit measures of prejudice were included in both studies. Analyses of both studies revealed that teachers reported lower levels of relatedness support for students with a low SES than for students with a high SES. In Study 2, we found that teachers reported to provide low-SES students with less autonomy support and more competence support than their high-SES classmates. For autonomy support, this distinction was associated with differences in students' gender and teachers' perceptions of students' academic ability and classroom behavior rather than SES. Moreover, we found that teachers differentiated their need support more strongly when they had more prejudiced attitudes toward low SES.

#### **Session C 4**

20 August 2023 15:30 - 17:00

UOM\_A07

Single Paper

Motivational, Social and Affective Processes

#### **Motivation in Secondary Education**

**Keywords:** Achievement, Engagement, Goal Orientations, Motivation, Pandemic, Quantitative Methods, Secondary Education, Self-efficacy, Self-regulated Learning and Behaviour

**Interest group:** SIG 08 - Motivation and Emotion

**Chairperson:** Daniel Sanchez, University of Oslo, Norway

#### **An Investigation into Students' Effort in English Classrooms: A Multilevel Latent Profile Analysis**

**Keywords:** Engagement, Motivation, Quantitative Methods, Secondary Education

**Presenting Author:**Robin Nagy, UNSW, Australia; **Co-Author:**Rebecca Collie, University of New South Wales, Australia; **Co-Author:**Andrew Martin, University of New South Wales, Australia

Students' effort represents a largely unexplored area of research with the potential for significant impacts on academic (and other) outcomes, due to its considerable malleability at both student- and classroom-levels. Although prior research is beginning to show that effort is linked with positive outcomes for students in general, less is known about whether different effort factors combine to reveal distinct student effort profiles. This study, for the first time, utilises a person-centred approach, to examine different student and classroom effort profiles, among 1,544 secondary school students and 62 teachers, nested within 114 English classes from years 7-10 in nine Australian schools. Students were from years 7 to 10, and a mixture of boys (56%) and girls (44%) from single-sex and coeducational schools. Latent profile analyses were employed at Level 1 (student) and Level 2 (classroom), to determine prominent student and classroom effort profiles in English. Effort was measured from both student and teacher perspectives using a novel multidimensional (operative, cognitive and social-emotional) Effort Scale. Results revealed six distinct student effort profiles and two distinct classroom effort profiles, that had unique associations with academic outcomes in English. This paper presents an overview of these results and some implications for classroom practice.

#### **Adolescents' Academic Possible Selves, Self-Regulation and School Achievement in uncertain times**

**Keywords:** Achievement, Motivation, Secondary Education, Self-regulated Learning and Behaviour

**Presenting Author:**Evropi Efthymiadou, Aristotle University of Thessaloniki, Greece; **Co-Author:**Eleftheria Gonida, Aristotle University of Thessaloniki, Greece

Academic Possible Selves (PSs) are defined as future self-representations about education and academic outcomes, can be both hoped-for and feared ones, and have been acknowledged as having high motivational power, especially in challenging situations. Given the current uncertainty, the present study aimed to investigate the association of adolescents' academic PSs (academic PSs' plausibility, perceived efficacy and perceived relevance of school for attaining them) with academic self-regulation and school achievement. A sample of 599 10th graders from general and vocational high schools were asked (i) to report their two most important hoped-for and feared PSs as well as their strategies to achieve/avoid them, and (ii) to respond to self-report scales measuring perceived efficacy of attaining their PSs, perceived school-relevance for their PSs' attainment (i.e., seeing school-as-a-path and skepticism about school), perceived world-unpredictability, academic self-regulation (learning and behavior) and school achievement (GPA). The qualitative results indicated that academic PSs were frequent among adolescents' hoped-for PSs, but less frequent among their feared ones. Data analyses showed that (i) girls and general school students had a more adaptive profile in relation to the study variables, (ii) academic PSs when coupled with strategies to achieve them (academic PSs' plausibility) predicted academic self-regulation and this association was mediated by seeing school-as-a-path, skepticism about school and perceived efficacy for attaining their PSs, and (iii) academic PSs' plausibility and seeing school-as-a-path predicted school achievement. The results are discussed in light of current theory and evidence and implications for practice are pointed out.

### **The effect of goal orientations on student participation and performance in an Ancient Greek course**

**Keywords:** Achievement, Goal Orientations, Pandemic, Self-efficacy

**Presenting Author:**Georgia Stavropoulou, Aristotle University of Thessaloniki, Greece; **Co-Author:**Eleni Karastergiou, Aristotle University of Thessaloniki, Greece; **Co-Author:**Dimitrios Stamovlasis, Aristotle University of Thessaloniki, Greece

This research investigated the level of participation and achievement of first grade students in the course of Ancient Greek in a one-year longitudinal study. Specifically, the role of variables: achievement goal orientations, self-efficacy, and interest in relation to participation and performance was examined, before and during the covid-19 pandemic period. Self-report scales were used to measure the above latent variables, while, weekly measures of achievement and observations of students' classroom participation were carried out everyweek. Empirical data were analyzed using latent class analysis, a person-centered approach, in order to extract specific student profiles based on goal orientations. The findings revealed that, first, specific motivational profiles were associated with student participation and high achievement and second, that pandemic and distance education might affect these profiles, however, the achievement goal theory constantly holds providing cogent explanations of students' academic behavior. The results are discussed in the context of contemporary theories, the effect of the pandemic on education and in the framework of teaching Ancient Greek, and implications for educational practice are highlighted.

### **Session C 5**

20 August 2023 15:30 - 17:00

UOM\_A04

Single Paper

Higher Education

### **Learning and Skills in Higher Education**

**Keywords:** Cognitive Skills and Processes, Competencies, Critical Thinking, Emotion and Affect, Higher Education, Motivation, Qualitative Methods, Reasoning, Science and STEM, Social Sciences and Humanities, Sustainable Development

**Interest group:** SIG 04 - Higher Education, SIG 26 - Argumentation, Dialogue and Reasoning

**Chairperson:** Kai Yin Chan, Loughborough University, United Kingdom

### **Difficulties in reasoning about causality hinder comprehensive discussion about climate change**

**Keywords:** Cognitive Skills and Processes, Higher Education, Qualitative Methods, Sustainable Development

**Presenting Author:**Tommi Kiviluoma, University of Helsinki, Finland; **Co-Author:**Ilona Södervik, University of Helsinki, Finland

Systems thinking skills are essential in creating solutions that mitigate the devastating effects of global climate change. Science and sustainability education have acknowledged this. Biology is one the major key disciplines involved in climate change research. Yet, the learning progression of systems thinking skills among biology students is unresearched. This study used a single cohort descriptive approach to investigate how undergraduate biology students ( $N = 42$ ) employ systems thinking skills when tasked to contemplate consequences of global climate change. We designed a case task that included scientific research material which the students read in an experimental setting and answered to three open-ended questions related to the presented material. Qualitative content analysis was performed to both categorize challenges identified by the students and the systems thinking skill levels exhibited in the students' reasoning. The internal characteristics of students' reasoning was also categorized. Students identified challenges rather uniformly and few students discussed multiple challenges simultaneously. This was then reflected in the levels of systems thinking skills. Most students remained on the lower skill levels exhibiting an ability to identify system structures and relationships within. Higher levels, where students would indicate an analysis of feedback loops and interactions both within and between systems, were demonstrated by few students. A crucial finding was that flawed causal relationships and internal conflicts were exhibited by the same students with lower systems thinking skills. Further research into this descriptive connection is warranted in educational research.

### **21st-Century Skills Important for Social Science Students' Career Sustainability: A Systematic Review**

**Keywords:** Competencies, Higher Education, Social Sciences and Humanities, Sustainable Development

**Presenting Author:**Ayşegül Karaca-Atik, Erasmus University Rotterdam, Netherlands; **Co-Author:**Marieke Meeuwisse, Erasmus University Rotterdam, Netherlands; **Co-Author:**Marjan Gorgievski, Erasmus University Rotterdam, Netherlands; **Co-Author:**Guus Smeets, Erasmus University Rotterdam, Netherlands

Teaching 21st-century skills is widely recognized as an important task of higher education. However, an overview of which skills students need to obtain a sustainable career is missing. We aimed to take stock of current knowledge on which 21st-century skills are considered important for social sciences students' sustainable career development and how these skills contribute to their career sustainability. For this systematic review, we followed PRISMA guidelines and conducted literature searches in seven databases. We selected peer-reviewed empirical articles that were published between 2003 and 2019 and addressed graduates' and employers' perspectives on the skills needed for social sciences graduates' career sustainability. Twelve articles met all our selection criteria and were included for a thematic analysis after quality appraisal. The included articles operationalized social sciences graduates' career sustainability mostly in terms of finding a job and maintaining employment, and to a lesser extent as high job performance, satisfaction and engagement. Social sciences graduates and employers most frequently reported communication and problem-solving as crucial for a sustainable career. Critical thinking, initiative and self-direction, and social and cross-cultural skills were additionally reported as important skills. None of the studies investigated mechanisms that would explain how these skills would exactly contribute to social sciences graduates' career sustainability. The results showed that studies to date have addressed only a limited number of career sustainability indicators. Moreover, explanatory mechanisms have largely been ignored. This is an important gap in the literature that future studies would need to address by building on the existing models.

### **Moderated Mediating Effects of Gender in Critical Thinking Disposition Components for Undergraduates**

**Keywords:** Critical Thinking, Emotion and Affect, Higher Education, Motivation

**Presenting Author:**Yong Liu, Doctoral School of Education, University of Szeged, Hungary

Critical thinking disposition (CTD), as the facet of the critical thinking (CT) framework, is regarded as the activation of critical thinking skills (CTS). There is a scarcity of studies on the relationships among CTD components and their mediating effects with respect to gender. This study, adopting Partial Least Squares Structural Equation Modeling (PLS-SEM) by STATA, seeks to investigate the moderated mediating effects of gender on the components of CTD among 661 Chinese undergraduates. The results found that (a) the scale has high reliability and validity for measuring undergraduates' CTD. (b) Instant judgment has a negative influence on habitual truth-digging with self-efficacy as the competitive partial mediator, in which, gender moderated the relationship between instant judgment and self-efficacy. These results necessitate educators to pay more attention to this gender role in CTD cultivation.

### **The context matters: Exploring students' use of the resonance concept in organic chemistry tasks**

**Keywords:** Higher Education, Qualitative Methods, Reasoning, Science and STEM

**Presenting Author:**Irina Braun, Justus-Liebig-University Giessen, Germany; **Co-Author:**Nicole Graulich, Justus-Liebig-University Giessen, Germany

Resonance is a crucial concept in organic chemistry that enables deriving chemical properties, molecular structures, and predicting reactions. Despite its importance for problem-solving and learning success in organic chemistry, research in chemistry education has shown that learners encounter various difficulties regarding the resonance concept, foremost a fragmented conceptual understanding of the concept, which leads to misconceptions. Although prior research also indicates that students apply this concept inadequately in problem-solving tasks, these studies are often limited to singular contexts. Given that task approaches and reasoning are context-dependent, it remains unclear how students use the resonance concept across different task contexts. However, such insights are essential to identify possible conceptual gaps and, subsequently, to support students adequately regarding the acquisition and application of this concept. To this end, a qualitative study was conducted with 21 undergraduate chemistry students, all beginners in organic chemistry. The participants solved three organic case comparison tasks in (un-)familiar contexts requiring the application of the resonance concept, followed by a retrospective semi-

structured interview focusing on their reasoning and problem-solving process. Through the analytical lens of the Coordination Class Theory, the extent to which students used their representations of resonance structures, and the variety of resource activation and connection in problem-solving across different tasks were examined. Although all students referred to similar structural features, the individual associations differed. As resources concerning the electronic level proved productive across different contexts, these ideas should be strengthened in future instructional interventions.

#### Session C 6

20 August 2023 15:30 - 17:00

UOM\_R01

Poster Presentation

Cognitive Science, Higher Education, Instructional Design

##### Best of JURE - Posters

**Keywords:** Cognitive Skills and Processes, Conceptual Change, Example-based Learning, Higher Education, Instructional Design, Knowledge Construction, Learning Analytics, Mathematics/Numeracy, Multimedia Learning, Primary Education, Science and STEM, Science Education

**Interest group:** SIG 06 - Instructional Design, SIG 07 - Technology-Enhanced Learning And Instruction, SIG 22 - Neuroscience and Education

**Chairperson:** Dimitrios Moustakas, Aristotle University of Thessaloniki, Greece

##### Does Constructive Retrieval Enhance Lasting Learning of Complex Material in Physics?

**Keywords:** Example-based Learning, Instructional Design, Knowledge Construction, Science and STEM

**Presenting Author:**Johanna Bohm, University of Freiburg, Germany; **Co-Author:**Tino Endres, University of Freiburg, Germany; **Co-Author:**Claudia von Aufschnaiter, University of Giessen, Germany; **Co-Author:**Andreas Vorholzer, Technical University of Munich, Germany; **Co-Author:**Alexander Eitel, University of Giessen, Germany; **Co-Author:**Alexander Renkl, University of Freiburg, Germany

Optimizing students' lasting learning in complex domains, e.g., in physics, requires teachers to address different instructional goals. Students need to understand the learning content in order to transfer this knowledge to new or more complex problems. Generative learning activities like self-explanations promote understanding and knowledge transfer. However, short-term understanding and transfer is not sufficient in educational settings. School curricula are designed in cycles in which the material is revised and increased in complexity after longer delays (e.g., eight weeks). Such delays require students to remember knowledge for longer periods to be able to extend their knowledge in the next cycle. Hence, this instructional goal could be addressed by using retrieval practice. Retrieval practice (e.g., closed-book vs. open-book task performance) was able to increase retention after a delay of one to two weeks. This study will investigate how combining retrieval practice and generative learning – referred to as constructive retrieval – fosters lasting learning of complex materials in physics after an eight-week delay. We will extend the literature by using longer delays and complex materials that allow to evaluate possible boundary conditions essential in educational settings. Therefore, we will implement a 2 (self-explanation prompts vs. description prompts) x 2 (closed-book vs. open-book) experimental between-subject design. We expect that only the combination of closed-book and self-explanation prompting will enhance lasting learning and thus prepare students optimally for future learning.

##### Effects of familiarity and complexity on inhibitory control in science learning: preliminary results

**Keywords:** Cognitive Skills and Processes, Conceptual Change, Primary Education, Science Education

**Presenting Author:**Élisabeth Bélanger, Université du Québec à Montréal (UQAM), Canada; **Co-Author:**Lorie-Marlène Brault Foisy, Université du Québec à Montréal (UQAM), Canada; **Co-Author:**Steve Masson, Université du Québec à Montréal (UQAM), Canada; **Co-Author:**Patrice Potvin, Université du Québec à Montréal, Canada; **Co-Author:**Emmanuel Ahr, Université du Québec à Montréal (UQAM), Canada; **Co-Author:**François Thibault, Université du Québec à Montréal (UQAM), Canada

Students hold a multitude of intuitive conceptions about natural phenomena that are inconsistent with scientific knowledge and often persist even after science instruction. Past research has highlighted the role of inhibitory control to “resist” intuitive conceptions in scientific reasoning. However, it appears that the activation of inhibitory control could vary depending on the nature of the scientific content to be learned, as well as of the one to be inhibited. We hypothesize that two variables could influence this need for inhibitory control: 1- the *familiarity* of an intuitive conception: the more familiar it is, the more control it might require; 2- the *complexity* of the scientific conception: the more complex, the more demanding it might be to resort to; both situations resulting in a greater need for inhibition. To test these two hypotheses, several pairs of conceptions (intuitive and its scientific counterpart) were submitted to a panel of scientific experts. They were asked to assign them a *familiarity* and *complexity* score to allow an objective selection of the four pairs that best fit the intersection of the two levels (low and high) of both *familiarity* and *complexity*. Using those pairs, four cognitive tasks were created using a negative priming paradigm relying on response time latencies to reveal inhibitory control's magnitude. A hundred 5-6<sup>th</sup> graders were recruited to complete the tasks. The analyses will allow an identification of the individual and combined effect of *familiarity* and *complexity* on the negative priming effect. First results will be presented at the conference.

##### Developing a digital cognitive training for understanding proof in higher education

**Keywords:** Higher Education, Learning Analytics, Mathematics/Numeracy, Multimedia Learning

**Presenting Author:**Svenja Kaiser, Pädagogische Hochschule Heidelberg, Germany; **Co-Author:**Markus Vogel, Heidelberg University of Education, Germany; **Co-Author:**Leif Döring, Universität Mannheim, Germany; **Co-Author:**Stefan Münzer, Universität Mannheim, Germany

Many empirical studies have shown that students of mathematics, especially at the beginning of their studies, are a diverse group of learners. The study of mathematics presents many different difficulties, and the dropout rate is accordingly high. Since proofs are central in mathematics and are also “bearers of mathematical knowledge”, the comprehension of given proofs is essential for students of mathematics. To support first-year mathematics students' proof comprehension, a digital cognitive training is to be developed, based on the program CoTutor from the University of Mannheim. The training is intended to offer worked examples paired with practice problems, since this has proven to be profitable for the learning progress in different research projects. In an experiment with three groups (control group, training group, dummy training group) and a field experiment with students at the University of Mannheim, the effect of the training on the students' proof comprehension will be investigated. Furthermore, the transfer effect on the understanding of proofs from other mathematical disciplines will be examined. The results should be available by 2024.

#### Session C 7

20 August 2023 15:30 - 17:00

UOM\_R02

Poster Presentation

Learning and Instructional Technology, Learning and Social Interaction, Lifelong Learning, Motivational, Social and Affective Processes

##### Collaborative Learning and Peer Interaction

**Keywords:** Assessment Methods, Computer-supported Collaborative Learning, Cooperative/Collaborative Learning, Cultural Diversity in School, Developmental Processes, E-learning/ Online Learning, Emotion and Affect, Engagement, Higher Education, Lifelong Learning, Pandemic, Peer Interaction, Primary Education, Reasoning, Social Interaction, Teacher Effectiveness, Teacher Professional Development

**Interest group:** SIG 08 - Motivation and Emotion, SIG 10 - Social Interaction in Learning and Instruction, SIG 14 - Learning and Professional Development, SIG 26 - Argumentation, Dialogue and Reasoning

**Chairperson:** Dimitris Tsekouras, Greece

##### Understanding social emotions and their regulation in online CSCL

**Keywords:** Computer-supported Collaborative Learning, Emotion and Affect, Higher Education, Social Interaction

**Presenting Author:**Sabrine Hassane, Open University of the Netherlands, Netherlands; **Co-Author:**Jorrick Beckers, Open University of the Netherlands, Netherlands; **Co-Author:**Karel Kreijns, Open University of the Netherlands, Netherlands

Online computer supported collaborative learning (CSCL) could be challenging for students attending distance higher education. These challenges become troublesome when negative emotions emerge thereby strongly influencing the learning process. Therefore, students need to regulate their emotions to collaborate successfully. Yet, little is known about emotion regulation, especially among students in online distance education. In the current study, we investigated the socio-emotional challenges, social emotions and their regulation in online CSCL. We used the Adaptive Instrument of Emotion Regulation (AIRE) corroborated with interviews to gain insight in the quantitative data. The results revealed that about 89% of the students experienced more than one socio-emotional challenge during the online collaboration. These challenges involved differences in personal life, differences in understanding of the task, group members who were not fully committed to the task and differences in interaction styles. These challenges gave rise to negative social emotions: such as disappointment, dislike, shame, anger and guilt. Finally, regulation of emotion seemed to be focused more on the self- and socially shared level, but less on the co-regulation level. Interviews revealed that socio-emotional challenges coincided with negative social emotion and that the students did not always feel safe to discuss their emotions among their group members. On the other hand, during successful collaboration students felt safer, had open conversations, and experienced more positive social emotions, including respect, sympathy, and trust. In conclusion, this study paints a rich picture of emotion regulation during both successful and unsuccessful collaborations.

#### **Socio-cognitive conflicts in managers' collaborative small group learning process**

**Keywords:** Cooperative/Collaborative Learning, Lifelong Learning, Peer Interaction, Social Interaction

**Presenting Author:**Markku Laajala, University of Jyväskylä, Finland

As part of my dissertation research project this paper produces new information about managers' collaborative learning and especially the role of socio-cognitive conflict in managers' collaborative learning processes in a small group setting. The study focuses on the socio-cognitive conflict in managers' collaborative small group learning process. The aim is to define the characteristics, features and forms of manifestation of the socio-cognitive conflict occurring during the first phases of managers' collaborative learning process in a small group. The initial results of the study show that the socio-cognitive conflicts tend to occur already during the very first small group sessions. The disagreement and different point of views are usually quite subtly, politely, discreetly and diplomatically expressed. It seems that when participants get to know each other better and the trust gets stronger, also the conflicts are expressed and reacted more strongly. The results of this study shall be helpful in future development of management training from the perspective of collaborative learning in order to better meet the demands of today's managers.

#### **The role of interaction in satisfying students' educational needs in blended learning**

**Keywords:** Engagement, Peer Interaction, Social Interaction, Teacher Effectiveness

**Presenting Author:**Yaroslav Opanasenko, H.S. Skovoroda Kharkiv National Pedagogical University/ University of Tartu, Estonia

Blended learning is one of the most popular forms of learning today and is successfully used all over the world. Despite the fact that now there isn't any global accepted definition of blended learning, general agreement that the key ingredients of blended learning are face-to-face and online instruction or learning is accepted. Multiple studies show the positive effects of blended learning on students' academic achievement (Bazelais & Doleck, 2018), motivation (Monteiro & Morrison, 2014), satisfaction (Chang, Shu, Liang, Tseng, & Hsu, 2014), engagement (McLaughlin et al., 2015) and many other outcomes of the educational process. However, in order to unleash the full potential of blended learning and achieve the maximum level of effectiveness, it is necessary to ensure the pedagogical competence of the teacher in blended learning. Due to the fact that blended learning is a rather broad concept, it can be difficult to separate it from other forms of learning and identify the necessary competencies of a teacher. In this work, the interaction of a student with a teacher, content and other students is considered as a key element of blended learning.

#### **Talking Transactivity: Various Perspectives and a Possible Direction for Automated Analysis**

**Keywords:** Assessment Methods, Computer-supported Collaborative Learning, Cooperative/Collaborative Learning, Reasoning

**Presenting Author:**David Otten, University of Twente, Netherlands; **Co-Author:**Pantelis Papadopoulos, University of Twente, Netherlands; **Co-Author:**Maaikje Endendijk, University of Twente, Netherlands

Transactivity, or building upon a previous contribution of a learning partner, is important for the co-construction of knowledge during collaborative learning. This presentation presents various definitions and facets of transactivity. Our future goal is to provide tools for automated analysis and feedback on transactivity within collaborative learning. We aim to answer the following question: *What are different perspectives on transactivity and what perspective can contribute to the development of automated tools for feedback on transactivity?* Some definitions of transactivity, such as solely (dis-)agreeing with a learning partner's contribution, or a simple paraphrase, do not necessarily assess the co-construction of knowledge. In the context of collaborative learning, a tool for automated analysis should ideally also take this factor into account. Based on existing definitions synthesized with recent research, we argue that a linguistic perspective on transactivity is needed to achieve our future goal. The poster provides an overview of coded examples using different perspectives on transactivity. It conclusively presents a model which can be applied when a more linguistic-level approach to transactivity is desirable.

#### **Are peer interaction during school recess and motor performance related in 6- to 8-year olds?**

**Keywords:** Developmental Processes, Peer Interaction, Primary Education, Social Interaction

**Presenting Author:**Dagmar Derikx, University Medical Center Groningen / University of Groningen, Netherlands; **Co-Author:**Marina Schoemaker, University Medical Center Groningen / University of Groningen, Netherlands; **Co-Author:**Suzanne Houwen, University of Groningen, Netherlands; **Co-Author:**Esther Hartman, University Medical Center Groningen / University of Groningen, Netherlands

Motor development during childhood is predictive for success later in life, but motor skill levels have decreased significantly over the past decades. Therefore, it is important to identify potentially modifiable risk- or enabling factors. Through interactions with other people, children may improve their motor skills by observing and imitating the motor skills of others and by practicing their own motor skills. School is an influential place, as children spend many hours there. Recess is the main setting for children to interact relatively freely with peers, which provides opportunities to practice motor skills. Therefore, the aim of this study is to examine the relationship between the amount and type of interaction with peers during recess and the motor performance of 6- to 8-year-old typically developing children. Motor performance is measured with the Movement Assessment Battery for Children-2. Interaction with peers during recess is observed using an adapted version of the System for Observing Children's Activity and Relationships During Play during which the physical activity level, group size, group composition, activity type, and interaction type are noted. The sample presently consists of 72 children (mean age 89.0 ± 5.6 months, 55.6% boys), but data collection is still in progress (required  $n = 95$ ). As far as we know, we are the first to investigate this relationship in 6- to 8-year-old typically developing children. Knowledge regarding this relationship will give teachers and policy makers the opportunity to create the most optimal situations during recesses in which motor performance can be practiced and improved.

#### **The effect of cultural self-construal on conformity to other's facial expression and gaze allocation**

**Keywords:** Cooperative/Collaborative Learning, Cultural Diversity in School, E-learning/ Online Learning, Social Interaction

**Presenting Author:**Kirara Kuroboshi, Kyoto University, Japan; **Co-Author:**Emmanuel Manalo, Kyoto University, Japan

This study aimed to examine how cultural self-construal influences conformity to other's facial expression and gaze allocation by using the stimulus video which presents a discussion scene in online communication. The video included one speaker expressing an opinion and five audience using facial expressions to reflect their opinion toward the speaker. After watching the video, participants responded to a questionnaire asking to what extent they agree or disagree with the speaker's opinion, and an independent-interdependent self-construal scale. The results indicated that others' facial expressions influence decision-making during discussions and that people with higher interdependent self-construal tend to be influenced by the others' facial expressions. Gaze measurements did not show that people with higher interdependent self-construal pay more attention to surrounding others. These results predict that eye gaze may be influenced by the country in which one lives, and judgments such as opinion rating may be influenced by cultural self-construal (personal traits).

## **CORONA-19 pandemic as a source of professional growth for Estonian museum educators**

**Keywords:** Cooperative/Collaborative Learning, Lifelong Learning, Pandemic, Teacher Professional Development

**Presenting Author:** Helene Uppin, Tallinn University, Estonia; **Co-Author:** Inge Timoštšuk, Tallinn University, Institute of Educational Sciences, Estonia

School teachers rely on museum environments and educators to illustrate and deepen subject matter. During CORONA-19 pandemic Estonian schools were sent to mandatory distance learning for months. Field trips to museums were cancelled, postponed or changed into on-line learning activities. Museum educators had to be flexible and creative to continue their work amid these uncertainties. This case-study analyses interviews with museum educators conducted in 2020-2021 to examine the effects of corona pandemic induced uncertainties to the community of practice of museum educators. The pandemic nudged museum educators to engage in deep collaborative learning and tailor learning activities according to school teachers' needs. A strong community of practice helped Estonian museum educators to collaboratively manage increased uncertainties: improve technical and digital skills; find suitable methods for distance learning; and reflect fears and worries induced by the pandemic.

### **Session C 8**

20 August 2023 15:30 - 17:00

UOM\_A10

Roundtable

Higher Education, Learning and Special Education, Lifelong Learning

#### **Writing and Literacy**

**Keywords:** Competencies, Feedback, Higher Education, Inclusive Education, Lifelong Learning, Mixed-method Research, Primary Education, Reading, Researcher Education, Teaching/Instructional Strategies, Writing/Literacy

**Interest group:** SIG 11 - Teaching and Teacher Education, SIG 12 - Writing

**Chairperson:** Weiwei Li, University Groningen, Netherlands

#### **Let's Talk about Writing – A Poster on Academic Writing Habits for Researcher Education**

**Keywords:** Competencies, Lifelong Learning, Researcher Education, Writing/Literacy

**Presenting Author:** Christian Thurn, ETH Zurich, Switzerland

How often do you write? How do you feel about your amount of writing? If empirical research is to be trusted, you are likely not satisfied with your daily amount of writing (Sarnecka, 2021; Silvia, 2007). What can we do about this? In this roundtable, I will present a poster on academic writing that lists common barriers and tips. The poster is based on resources about writing, such as books and scientific articles. Two very effective methods entail distributed writing and social accountability. I will summarize the core ideas and what evidence shows how these can be used most effectively. Afterward, the participants are invited to share what worked and what did not work so well for them. The resulting overview will inform researchers about evidence-based tips on academic writing that will hopefully be a valuable tool for doctoral students, postdocs, and professors. After getting valuable feedback from the JURE community, I will revise the poster and share it, so that everybody is free to use it as advice and inspiration.

#### **Exploring a university teacher's feedback practices and reasons underlying her choices**

**Keywords:** Feedback, Higher Education, Teaching/Instructional Strategies, Writing/Literacy

**Presenting Author:** Listiani Listiani, University of Szeged, Hungary

Examining EFL teachers' feedback practices and their cognition has become an essential area of research as teachers decide how they conduct their teaching process. This case study provides a detailed account of a novice teacher of L2 writing as this current study explored how an EFL university teacher offered feedback to students' written assignments during her career and to identify reasons (if any) underlying the teacher's choices of feedback. The qualitative data reported here is based on a semi-structured interview. The findings indicated that she employed different types of feedback modes and strategies and integrated the feedback practices, used scoring rubrics, and adapted an online feedback application, an online word processor, and online discussion platforms. The emerging reasons behind the practices were also discussed, including learning environment adjustment, time constraints, and boosting students' engagement and motivation. The other reasons were also presented. By considering this teacher's case, we can obtain a more insightful knowledge of various factors underlying her feedback practices as she implemented feedback practices in the L2 writing classroom.

#### **Exploring the relevance of an EFL teacher's feedback practice with good feedback practice principle**

**Keywords:** Feedback, Higher Education, Teaching/Instructional Strategies, Writing/Literacy

**Presenting Author:** Listiani Listiani, University of Szeged, Hungary

This study aimed to explore a university teacher's feedback practices that were delivered to students during her career and to evaluate the relatedness of the teacher's feedback practice with the principles of good feedback practice. This study adopted a case study that provided a thorough description of feedback practices employed by a university teacher of an EFL writing classroom in an Indonesian tertiary. The qualitative data were collected through a semi-structured interview. The findings showed that she employed various feedback practices that related to the principles of good feedback practices. By considering the teacher's case, we can gain insights into the teacher's feedback practices that conformed to the principles of good feedback practices. Teachers and scholars can maintain good feedback practices or change the practices that do not demonstrate the principles of good feedback practice.

#### **Strength-Based Support in Reading Literacy Instruction for Students' Success**

**Keywords:** Inclusive Education, Mixed-method Research, Primary Education, Reading

**Presenting Author:** Diana von Börtzell-Szuch, Stockholm University, Sweden

Abstract Students with advanced reading literacy skills are often neglected in research and also, in primary school their educational needs are seldom met. Therefore, the present study focuses on how reading literacy instruction can be designed to provide opportunities to show advanced literacy skills and to achieve at high levels, in order to promote all students' reading literacy development based on every student's strengths in an inclusive primary school system. The research project in progress has three overarching aims. The first aim is to investigate how teachers in primary school define, identify and meet the educational needs of students with advanced literacy skills. The second aim is to investigate primary school teachers' experiences when using a research-based reading literacy instruction model designed from an inclusive perspective by using the Response to Intervention model (RtI) as a framework, in order to support all students' development of reading literacy skills. Finally, the third aim is to investigate students with advanced literacy skills experiences of the reading literacy instruction model. Preliminary, the theoretical framework of giftedness will be Ziegler's (Ziegler, 2005) actiotop model of giftedness. The method will be mixed, using teacher and student surveys pre and post intervention, teaching observations, teacher and student interviews post intervention, and teacher interviews in focus groups pre and post intervention.

### **Session C 9**

20 August 2023 15:30 - 17:00

UOM\_R05

Roundtable

Educational Policy and Systems, Higher Education, Lifelong Learning

#### **Higher Education and Informal Learning**

**Keywords:** Achievement, Critical Thinking, Digital Literacy and Learning, Educational Attainment, Educational Policy, Higher Education, Inclusive Education, Instructional Design, Knowledge Construction, Mindsets, Problem Solving, Qualitative Methods

**Interest group:** SIG 06 - Instructional Design, SIG 14 - Learning and Professional Development, SIG 18 - Educational Effectiveness and Improvement  
**Chairperson:** Maiki Vanahans, Tallinn University, Estonia

### **Knowing and learning in crowdwork practices: Informal education for digital work?**

**Keywords:** Digital Literacy and Learning, Knowledge Construction, Problem Solving, Qualitative Methods

**Presenting Author:** Karen Schwien, Helmut Schmidt University, Germany

Learning and knowing for digital work does not only take place in formal education but also in informal work settings. One example for a new form of digital work is crowdwork, platform-mediated tasks offered by clients to mostly self-employed workers. Recent research suggests that it offers learning opportunities for the development of both platform-specific skills and broader capabilities for digital work. Building on the praxeological perspective of knowing-in-practice, I conduct a Netnography on knowing and learning in crowdwork. Netnography is an ethnographic approach for digital contexts. Starting in November 2021, 21 narrative interviews and an ethnographic self-experiment have been conducted. This is complemented by a diary study with about 24 crowdworkers. The data is analysed following the approaches of Netnography combining coding and interpretation with the aim of theory development. Based on that a detailed overview of crowdwork practices and entangled learning and knowing could be derived. It shows that crowdwork offers specific opportunities for learning and knowing in practice. Crowdworkers develop digital capabilities for example in dealing with social and cultural clues on the platform. Educational measures can both complement and support learning in informal work settings or use platforms as practical application context for formally acquired skills.

### **Predicting Training Outcomes in the Ability to Avoid Bias in Statistical Reasoning**

**Keywords:** Critical Thinking, Higher Education, Instructional Design, Mindsets

**Presenting Author:** Rowan Haen, University Utrecht, Netherlands; **Co-Author:** Eva Janssen, Utrecht University, Netherlands; **Co-Author:** Peter Verkoefen, Avans Hogeschool / Avans University of Applied Sciences, Netherlands; **Co-Author:** Lara van Peppen, Avans Hogeschool / Avans University of Applied Sciences, Netherlands; **Co-Author:** Tamara Van Gog, Utrecht University, Netherlands

Developing students' critical thinking (CT) skills is one of the major ambitions of higher education. However, people are vulnerable to bias – systematic reasoning errors – and therefore often violate the rules of probability theory while making decisions. Research has shown that this can be trained. However, not all students seem to benefit equally from training in CT, given the variability in performance among trained students. The present study aims to explain the variability in higher education students' ability to avoid biases in statistical reasoning by looking at the relationship with (theoretically relevant) individual differences (e.g., cognitive ability, numeracy skills, thinking dispositions) before and after an online training. We use a correlational design with 900 participants, from both academic universities and universities of applied sciences and from different study domains. Students receive a training on (avoiding bias in) statistical reasoning, focused on Bayesian Inference tasks. Pre-test and post-tests will assess Bayesian Inference tasks (learning tasks: instructed and practiced during the training), base-rate tasks (near transfer) and inverse probability tasks (far transfer). Results will show the relationship between individual differences and the ability to avoid bias in statistical reasoning before and after an online training. This is important as we need a better understanding of individual differences that might affect students' ability to (learn to) avoid biased reasoning to make training in CT more adaptive to different students' needs.

### **Exploring access to higher education courses in Irish further education through a Bourdieusian lens**

**Keywords:** Achievement, Educational Attainment, Educational Policy, Inclusive Education

**Presenting Author:** Touria Jouilla, University of Aberdeen, Ireland

Abstract For adult, non-traditional learners, Access to Higher Education (AHE) in the Republic of Ireland, like in many other countries, can be through secondary education pathways (The Leaving Certificate) or through the Further Education and Training path. Research from the Irish context and beyond suggests that access to HE is an under-researched area, particularly concerning student support and barriers to progression for access students. This research is concerned with the experiences of and support systems provided to non-traditional, adult students enrolled on AHE programmes in Irish Further Education and Training, often referred to as "the FET sector". These non-traditional learners are adults who did not complete the traditional Leaving Certificate, the standard secondary-level Irish qualification granting entry to HE. They are students that have been out of education for long periods of time and require a transition route to HE. A FET AHE course in this study refers to courses that offer an alternative route to HE. The study explores the lived experiences of FET AHE students in colleges under the aegis of local FET ETBs (Education Training Boards). Additionally, the research addresses the assumption that due to the wide spectrum of programmes covered by the Irish tertiary (FET) sector, the extensive range of other FET programmes, such as apprenticeships and traineeships, eclipses AHE programmes and learners.

### **Workshops I 1**

20 August 2023 17:15 - 18:45

UOM\_A09

JURE Invited Workshop

### **Latent Class Analysis: Applications to Learning and Instruction Research**

**Keywords:** Mixed-method Research, Qualitative Methods, Quantitative Methods, Researcher Education

**Interest group:**

**Chairperson:** Dimitrios Moustakas, Aristotle University of Thessaloniki, Greece

LCA is a psychometric method, which uses Bayesian statistics to classify a set of responses or observable categories into clusters or latent classes, based on a set of conditional probabilities, i.e., the probabilities of having a response pattern, given that the person belongs to a specific latent class (group / profile). External variables can also be incorporated in a LC model, either as covariates or as distal outcomes. CA has had numerous applications in a wide range of disciplines, during the past decade. More specifically, in behavioral sciences research, LCA has been proved an effective tool in deriving participants' profiles and answering challenging research questions.

Details

Introduction to Latent Variable Theory Basic formalism and mathematical relationships Epistemological assumptions and considerations Choosing the best LC model solution Associating the ensued latent classes (or latent profiles) with external variables Choosing covariates and distal outcomes Specific applications Learning Objectives

Understanding the theoretical and methodological assumptions of LCA Defining the appropriate model for testing Choosing the LC model solution that best fits the data Being able to incorporate external variables Interpreting the findings

Interactivity

Workshop will be interactive with examples, case studies and group exercises.

### **Latent Class Analysis: Applications to Learning and Instruction Research**

**Presenting Author:** Julie Vaiopoulou, Aristotle University of Thessaloniki, Greece

LCA is a psychometric method, which uses Bayesian statistics to classify a set of responses or observable categories into clusters or latent classes, based on a set of conditional probabilities, i.e., the probabilities of having a response pattern, given that the person belongs to a specific latent class (group / profile). External variables can also be incorporated in a LC model, either as covariates or as distal outcomes. CA has had numerous applications in a wide range of disciplines, during the past decade. More specifically, in behavioral sciences research, LCA has been proved an effective tool in deriving participants' profiles and answering challenging research questions.

Details

Introduction to Latent Variable Theory Basic formalism and mathematical relationships Epistemological assumptions and considerations Choosing the best LC model solution Associating the ensued latent classes (or latent profiles) with external variables Choosing covariates and distal outcomes Specific applications

## Learning Objectives

Understanding the theoretical and methodological assumptions of LCA  
Defining the appropriate model for testing  
Choosing the LC model solution that best fits the data  
Being able to incorporate external variables  
Interpreting the findings

## Interactivity

Workshop will be interactive with examples, case studies and group exercises.

## Workshops I 2

20 August 2023 17:15 - 18:45

UOM\_A04

JURE Invited Workshop

### An Introduction to Multilevel Analysis with R

**Keywords:** Meta-analysis, Quantitative Methods, Researcher Education, Synergies between Learning / Teaching and Research

**Interest group:**

**Chairperson:** Charleen Brand, Ruhr University Bochum, Institute of Educational Research, Germany

In the context of learning and instruction, we often collect dependent or even hierarchical/nested data. For the latter, data analysis can be very complex and therefore challenging for most (young) researchers. In addition to conceptual understanding of multi-level models, skills in appropriate analysis programs are required for later analysis. The aim of this workshop is to give an overview on different multi-level models and enable participants to code examples in R. To establish a foundation for all levels of prior knowledge, the first part of this workshop will focus on a theoretical basis of multi-level models. The second part of the workshop will be hands on. Participants will learn how they have to structure their data in R and conduct a two-level analysis for a repeated measurement design. The goal should not be to become an expert but to create individually annotated code to work with in future multi-level analysis. In the third and final part of the workshop we will combine what we have learned from the first two parts and move on to the interpretation of the analysis results.

Requirements for participation: - Bring your own laptop/device which is capable to run R and posit (formerly RStudio)- Latest versions of R and posit installed- Latest versions of required packages in posit- Download of the provided data set- Import of the provided data set in positIf you have registered for the workshop, the data set and a tutorial to get all the requirements running will be provided prior to the workshop via email. Since the workshop is limited to 90 minutes there will be no opportunity to help you meet these requirements on-site.

### An Introduction to Multilevel Analysis with R

**Presenting Author:**Markus Weber, Ruhr-University Bochum, Germany

In the context of learning and instruction, we often collect dependent or even hierarchical/nested data. For the latter, data analysis can be very complex and therefore challenging for most (young) researchers. In addition to conceptual understanding of multi-level models, skills in appropriate analysis programs are required for later analysis. The aim of this workshop is to give an overview on different multi-level models and enable participants to code examples in R. To establish a foundation for all levels of prior knowledge, the first part of this workshop will focus on a theoretical basis of multi-level models. The second part of the workshop will be hands on. Participants will learn how they have to structure their data in R and conduct a two-level analysis for a repeated measurement design. The goal should not be to become an expert but to create individually annotated code to work with in future multi-level analysis. In the third and final part of the workshop we will combine what we have learned from the first two parts and move on to the interpretation of the analysis results.

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## Workshops I 3

20 August 2023 17:15 - 18:45

UOM\_A10

JURE Invited Workshop

### An Introduction to Eye Tracking

**Keywords:** Educational Technologies, Eye Tracking, Immersive Technologies for Learning, Researcher Education

**Interest group:**

**Chairperson:** Athena Daniilidou, Greece

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### An Introduction to Eye Tracking

**Presenting Author:**Jo Van Herwegen, UCL Institute of Education, United Kingdom

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## Workshops I 4

20 August 2023 17:15 - 18:45

UOM\_CH

JURE Invited Workshop

### Academic Publishing

**Keywords:** Competencies, Researcher Education, Synergies between Learning / Teaching and Research, Writing/Literacy

**Interest group:**

**Chairperson:** Katerina Nerantzaki, Aristotle University of Thessaloniki, Greece

The workshop aims to provide insights into the process of academic publishing in a scholarly journal. Educational Research Review is one of the high-prestige EARLI journals, with a focus on the publication of review studies and meta-analytic studies. *Frontline Learning Research* is EARLI's open access journal, welcoming risk-taking and explorative studies that provide input for theoretical, empirical and/or methodological renewal within the field of research of learning

and instruction. The workshop leaders are responsible for these journals both from the academic perspective and the publishing perspective. The workshop is open for all JURE participants, irrespective of their prior experience and success in publishing. The participants' experiences will be included to illustrate steps that promote (or derogate) success in publishing. We will (1) present an introduction to writing (why and how?). Then we will discuss, (2) how to choose a journal and how to tailor the manuscript appropriately. We will further outline the (3) function of peer review and (4) editorial decisions. A next step will be to prepare the workshop participants (5) how to respond to peer review and editorial comments. Finally, we provide an overview of (6) essential publishing ethics.

#### **Academic Publishing**

**Presenting Author:**Hans Gruber, University of Regensburg, Germany; **Presenting Author:**Nina Bonderup Dohn, University of Southern Denmark, Denmark

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#### **Workshops I 5**

20 August 2023 17:15 - 18:45

UOM\_A05

JURE Invited Workshop

##### **"I've always wanted to be a part of a podcast"**

**Keywords:** Communication Skills, Competencies, Multimedia Learning, Researcher Education

**Interest group:**

**Chairperson:** Meropi Simou, Aristotle University of Thessaloniki, Greece

"I've always wanted to be a part of a podcast." Enhancing the Sustainability and Participation of the EARLI Research Stories PodcastThe EARLI Research Stories Podcast aims to celebrate and share the experiences of influential figures within the European Association for Research on Learning and Instruction (EARLI) community. Launched in 2022, this podcast provides insights into the career paths, research projects, and EARLI involvement of prominent researchers, serving as inspiration for those just beginning their academic journey.Developed by Dr. Stefan T. Siegel (Postdoc Education Researcher, Lecturer and Co-Coordinator of EARLI SIG4 Higher Education), the podcast has released seven episodes so far, featuring insightful conversations with guests such as Sari Lindblom or Jan Vermunt. The podcast production process involves careful guest selection, in-depth pre-interview preparation, high-quality recording, and professional post-production.However, creating a podcast requires time and effort, and to ensure its sustainability, the EARLI Research Stories Podcast is exploring ways to involve junior researchers from various Special Interest Groups (SIGs) within EARLI. This collaboration could take the form of guest hosting, content curation, or production assistance, offering diverse perspectives and facilitating a wider range of conversations. By sharing the workload and providing skill development opportunities, the podcast aims to foster a sense of community and create a more inclusive, diverse, and sustainable platform.To discuss these possibilities, a workshop will be hosted at the 27th JURE 2023 Pre-Conference in Thessaloniki, Greece. By opening the doors to collaboration, the EARLI Research Stories Podcast hopes to inspire and support the next generation of researchers, fostering a culture of curiosity, collaboration, and growth.

##### **"I've always wanted to be a part of a podcast"**

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

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#### **Workshops I 6**

20 August 2023 17:15 - 18:45

UOM\_R05

JURE Invited Workshop

##### **Socially Sustainable Learning Communities as a Hope in Uncertain Times**

**Keywords:** Communities of Learners and/or Practice, Inclusive Education, Social Aspects of Learning and Teaching, Social Interaction

**Interest group:**

**Chairperson:** Anastasia Mavridou, Greece

Socially Sustainable Learning Communities as a Hope in Uncertain Times: Educational and Legal PerspectivesEducation can vitally provide hope in uncertain times, as it is declared to be *"the bedrock of just, equal, and inclusive societies and a key driver of sustainable development"* (United Nations, 2020, p. 21). In socially sustainable learning communities, values of diversity and equity are embraced and the social inclusion of all – including those in vulnerable situations – is promoted. Experiences of social inclusion are built through meaningful participation, sense of belonging, agency (Cordier et al., 2017), and, from legal perspective, rights. Securing and fulfilling one's rights and basic psychological needs – autonomy, competence, and relatedness – importantly contribute to the experienced social inclusion (Leemaann et al., 2022; Vansteenkiste et al., 2020). In the workshop, building on a systemic understanding of socially sustainable learning communities, we will combine educational and legal perspectives. This is because there are no 'rights-free zones' – a legal system of some kind always exists. We will encourage the participants to reflect on: · What does it mean to experience social inclusion? How it can be promoted and what hinders it? · How does social inclusion contribute to building socially sustainable learning communities? · How do legal perspectives intertwine with the educational ones – regarding socially sustainable learning communities – and how might legal awareness enrich the participant's own research?Discussions are adapted to be relevant for the participants. Reflections can relate to any level of education – from pre-primary to universities – and concern any member of the learning community – from young children to teachers and teacher educators, up until early career researchers themselves. We are all needed in the creation of hope in uncertain times. The workshop will provide an invaluable opportunity to share cross-cultural experiences and to learn from one another.

##### **Socially Sustainable Learning Communities as a Hope in Uncertain Times**

**Presenting Author:**Marja Vauras, University of Turku, Finland; **Presenting Author:**Anne-Elina Salo, Universities of Turku and Jyväskylä, Finland; **Presenting**

**Author:**Virve Valtonen, University of Turku, faculty of Law, Finland

Socially Sustainable Learning Communities as a Hope in Uncertain Times: Educational and Legal Perspectives Education can vitally provide hope in uncertain times, as it is declared to be *“the bedrock of just, equal, and inclusive societies and a key driver of sustainable development”* (United Nations, 2020, p. 21). In socially sustainable learning communities, values of diversity and equity are embraced and the social inclusion of all – including those in vulnerable situations – is promoted. Experiences of social inclusion are built through meaningful participation, sense of belonging, agency (Cordier et al., 2017), and, from legal perspective, rights. Securing and fulfilling one’s rights and basic psychological needs – autonomy, competence, and relatedness – importantly contribute to the experienced social inclusion (Leemaann et al., 2022; Vansteenkiste et al., 2020). In the workshop, building on a systemic understanding of socially sustainable learning communities, we will combine educational and legal perspectives. This is because there are no ‘rights-free zones’ – a legal system of some kind always exists. We will encourage the participants to reflect on: · What does it mean to experience social inclusion? How it can be promoted and what hinders it? · How does social inclusion contribute to building socially sustainable learning communities? · How do legal perspectives intertwine with the educational ones – regarding socially sustainable learning communities – and how might legal awareness enrich the participant’s own research? Discussions are adapted to be relevant for the participants. Reflections can relate to any level of education – from pre-primary to universities – and concern any member of the learning community – from young children to teachers and teacher educators, up until early career researchers themselves. We are all needed in the creation of hope in uncertain times. The workshop will provide an invaluable opportunity to share cross-cultural experiences and to learn from one another.

#### **Workshops I 7**

20 August 2023 17:15 - 18:45

UOM\_A11

JURE Invited Workshop

#### **Implementing Open Science Practices in Qualitative Research Methods**

**Keywords:** Competencies, Mixed-method Research, Qualitative Methods, Researcher Education

**Interest group:**

**Chairperson:** Tania Vieites, Universidad de La Coruña, Spain

Open Science (OS) is a movement aimed at transforming scientific practice to address the challenges, opportunities, and risks of the ubiquitous digital era, while increasing the societal impact of science in response to the growing and complex global issues that humanity faces. OS can be seen as a novel paradigm promoting transparency, sharing, and sustainability. By fostering transparency throughout the research process, OS inevitably spurs methodological rigor and verifiability via the possibility to scrutinize and openly evaluate processes of knowledge production. Open processes further science and improve the effectiveness of scientific systems e.g., by increasing reusability and reducing research waste. OS has gained momentum among quantitative methods, but uptake is still relatively slow in qualitative methodology, which is due to several inhibiting factors. For example, there is a misconception that OS principles are less applicable to qualitative work, mainly due to another misconception that OS is equivalent to making your data open. Open practices in qualitative methods are also hindered by the perception that OS principles are challenging to implement in hermeneutic processes, where much of analysis may be subconscious or ineffable. Furthermore, while quantitative methods enjoy a wealth of open source tools with which an analysis journey can be documented and easily made public, there is a lack of such tools aiding transparency in qualitative work. The aim of the workshop is to identify typical processes in qualitative projects which can be made transparent, and to supply workshop participants with ideas, templates, tools, and best practices that facilitate implementing OS in their own work. Improving transparency in qualitative methods increases credibility of findings, accountability, verifiability, and if it is one’s aim, reusability and reproducibility of research as well. No prior knowledge about OS is needed to attend the workshop, but (some) experience with qualitative methods is recommended.

#### **Implementing Open Science Practices in Qualitative Research Methods**

**Presenting Author:** Szilvia Zörgő, Maastricht University, Netherlands

Open Science (OS) is a movement aimed at transforming scientific practice to address the challenges, opportunities, and risks of the ubiquitous digital era, while increasing the societal impact of science in response to the growing and complex global issues that humanity faces. OS can be seen as a novel paradigm promoting transparency, sharing, and sustainability. By fostering transparency throughout the research process, OS inevitably spurs methodological rigor and verifiability via the possibility to scrutinize and openly evaluate processes of knowledge production. Open processes further science and improve the effectiveness of scientific systems e.g., by increasing reusability and reducing research waste. OS has gained momentum among quantitative methods, but uptake is still relatively slow in qualitative methodology, which is due to several inhibiting factors. For example, there is a misconception that OS principles are less applicable to qualitative work, mainly due to another misconception that OS is equivalent to making your data open. Open practices in qualitative methods are also hindered by the perception that OS principles are challenging to implement in hermeneutic processes, where much of analysis may be subconscious or ineffable. Furthermore, while quantitative methods enjoy a wealth of open source tools with which an analysis journey can be documented and easily made public, there is a lack of such tools aiding transparency in qualitative work. The aim of the workshop is to identify typical processes in qualitative projects which can be made transparent, and to supply workshop participants with ideas, templates, tools, and best practices that facilitate implementing OS in their own work. Improving transparency in qualitative methods increases credibility of findings, accountability, verifiability, and if it is one’s aim, reusability and reproducibility of research as well. No prior knowledge about OS is needed to attend the workshop, but (some) experience with qualitative methods is recommended.

#### **Workshops II 1**

21 August 2023 09:00 - 10:30

UOM\_R05

JURE Invited Workshop

#### **Educator-child interactions and childhood social and emotional learning: A public health approach**

**Keywords:** Early Childhood Education, Emotion and Affect, Social Aspects of Learning and Teaching, Social Interaction

**Interest group:**

**Chairperson:** Christina Schoina, Aristotle University of Thessaloniki, Greece

Educator-child interactions can have a positive or negative impact on young children’s social and emotional learning (SEL). SEL describes how children acquire and apply knowledge, skills, and attitudes crucial for healthy development, including self and social awareness, self-management, relationship-building, and responsible decision-making. In this workshop, I will first outline how we co-designed the online Social-Emotional Engagement and Development (SEED) Program that is now being used by early child development and care educators in Victoria, Australia. Our goal is to enhance educator-child interactions to support young children’s SEL by working with educators to promote engagement with three tiers of SEL strategies - universal, target and selective. I will then workshop the elements of SEED and how educators can best embed these SEL strategies into their existing practices via every day interactions with children and the barriers and enablers of doing so. The outcome of the workshop will be a better understanding of how we can support children social and emotional growth taking a public health approach.

#### **Educator-child interactions and childhood social and emotional learning: A public health approach**

**Presenting Author:** Helen Skouteris, Monash University, Australia

Educator-child interactions can have a positive or negative impact on young children’s social and emotional learning (SEL). SEL describes how children acquire and apply knowledge, skills, and attitudes crucial for healthy development, including self and social awareness, self-management, relationship-building, and responsible decision-making. In this workshop, I will first outline how we co-designed the online Social-Emotional Engagement and Development (SEED) Program that is now being used by early child development and care educators in Victoria, Australia. Our goal is to enhance educator-child interactions to

support young children's SEL by working with educators to promote engagement with three tiers of SEL strategies - universal, target and selective. I will then workshop the elements of SEED and how educators can best embed these SEL strategies into their existing practices via every day interactions with children and the barriers and enablers of doing so. The outcome of the workshop will be a better understanding of how we can support children social and emotional growth taking a public health approach.

## Workshops II 2

21 August 2023 09:00 - 10:30

UOM\_A04

JURE Invited Workshop

### An Introduction to Multilevel Analysis with R

**Keywords:** Meta-analysis, Quantitative Methods, Researcher Education, Synergies between Learning / Teaching and Research

**Interest group:**

**Chairperson:** Athena Daniilidou, Greece

In the context of learning and instruction, we often collect dependent or even hierarchical/nested data. For the latter, data analysis can be very complex and therefore challenging for most (young) researchers. In addition to conceptual understanding of multi-level models, skills in appropriate analysis programs are required for later analysis. The aim of this workshop is to give an overview on different multi-level models and enable participants to code examples in R. To establish a foundation for all levels of prior knowledge, the first part of this workshop will focus on a theoretical basis of multi-level models. The second part of the workshop will be hands on. Participants will learn how they have to structure their data in R and conduct a two-level analysis for a repeated measurement design. The goal should not be to become an expert but to create individually annotated code to work with in future multi-level analysis. In the third and final part of the workshop we will combine what we have learned from the first two parts and move on to the interpretation of the analysis results.

Requirements for participation: - Bring your own laptop/device which is capable to run R and posit (formerly RStudio)- Latest versions of R and posit installed- Latest versions of required packages in posit- Download of the provided data set- Import of the provided data set in positIf you have registered for the workshop, the data set and a tutorial to get all the requirements running will be provided prior to the workshop via email. Since the workshop is limited to 90 minutes there will be no opportunity to help you meet these requirements on-site.

### An Introduction to Multilevel Analysis with R

**Presenting Author:**Markus Weber, Ruhr-University Bochum, Germany

In the context of learning and instruction, we often collect dependent or even hierarchical/nested data. For the latter, data analysis can be very complex and therefore challenging for most (young) researchers. In addition to conceptual understanding of multi-level models, skills in appropriate analysis programs are required for later analysis. The aim of this workshop is to give an overview on different multi-level models and enable participants to code examples in R. To establish a foundation for all levels of prior knowledge, the first part of this workshop will focus on a theoretical basis of multi-level models. The second part of the workshop will be hands on. Participants will learn how they have to structure their data in R and conduct a two-level analysis for a repeated measurement design. The goal should not be to become an expert but to create individually annotated code to work with in future multi-level analysis. In the third and final part of the workshop we will combine what we have learned from the first two parts and move on to the interpretation of the analysis results.

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## Workshops II 3

21 August 2023 09:00 - 10:30

UOM\_A09

JURE Invited Workshop

### Latent Class Analysis: Applications to Learning and Instruction Research

**Keywords:** Mixed-method Research, Qualitative Methods, Quantitative Methods, Researcher Education

**Interest group:**

**Chairperson:** Georgia Stavropoulou, Aristotle University of Thessaloniki, Greece

LCA is a psychometric method, which uses Bayesian statistics to classify a set of responses or observable categories into clusters or latent classes, based on a set of conditional probabilities, i.e., the probabilities of having a response pattern, given that the person belongs to a specific latent class (group / profile).

External variables can also be incorporated in a LC model, either as covariates or as distal outcomes. CA has had numerous applications in a wide range of disciplines, during the past decade. More specifically, in behavioral sciences research, LCA has been proved an effective tool in deriving participants' profiles and answering challenging research questions.

Details

Introduction to Latent Variable Theory Basic formalism and mathematical relationships Epistemological assumptions and considerations Choosing the best LC model solution Associating the ensued latent classes (or latent profiles) with external variables Choosing covariates and distal outcomes Specific applications Learning Objectives

Understanding the theoretical and methodological assumptions of LCA Defining the appropriate model for testing Choosing the LC model solution that best fits the data Being able to incorporate external variables Interpreting the findings

Interactivity

Workshop will be interactive with examples, case studies and group exercises.

### Latent Class Analysis: Applications to Learning and Instruction Research

**Presenting Author:**Julie Vaiopoulou, Aristotle University of Thessaloniki, Greece

LCA is a psychometric method, which uses Bayesian statistics to classify a set of responses or observable categories into clusters or latent classes, based on a set of conditional probabilities, i.e., the probabilities of having a response pattern, given that the person belongs to a specific latent class (group / profile).

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Introduction to Latent Variable Theory Basic formalism and mathematical relationships Epistemological assumptions and considerations Choosing the best LC model solution Associating the ensued latent classes (or latent profiles) with external variables Choosing covariates and distal outcomes Specific applications Learning Objectives

Understanding the theoretical and methodological assumptions of LCA Defining the appropriate model for testing Choosing the LC model solution that best fits the data Being able to incorporate external variables Interpreting the findings

Interactivity

Workshop will be interactive with examples, case studies and group exercises.

## Workshops II 4

21 August 2023 09:00 - 10:30

UOM\_A11

JURE Invited Workshop

### **Gazing at the learning brain: a reflective and interactive overview of neuroscience and education**

**Keywords:** Cognitive Skills and Processes, Educational Neuroscience, Educational Technologies, Researcher Education

**Interest group:**

**Chairperson:** Charleen Brand, Ruhr University Bochum, Institute of Educational Research, Germany

"Educational Neuroscience" refers to an interdisciplinary research field that explores the connection between education and neurocognitive/neurobiological mechanisms of learning and brain plasticity. Important insights on how the brain changes as a consequence of learning and basic principles of how the brain learns have emerged from this joined collaboration. In this workshop, we will provide an interactive introduction to the field of educational neuroscience, how to become a neuroscientist and how to interpret neuroscientific literature. In the beginning of this workshop, we will first introduce the basic principles of functional magnetic resonance imaging (fMRI), Electroencephalography (EEG) and transcranial Electromagnetic Stimulation (tES) and how these techniques can be used in- and outside the classroom to investigate mechanisms of learning. We will also provide a critical look at "what" and "what cannot" be gained from using these techniques. Becoming a neuroscientist is a challenging endeavor and different choices have to be made when considering such a career. In the second part of this workshop, we will have a look at different routes for becoming a neuroscientist and at practical strategies to build a neuroscientific research career. We will also provide personal examples of our own trajectories and the opportunity to make specific inquiries in smaller Q & A groups. Reading and interpreting neuroscientific findings can be daunting. The final part of this workshop aims to familiarize participants with the unique language and specifics of neuroscientific publications. Using concrete examples from recently published articles, the objective of this exercise is to increase the scientific literacy of the participants and to further help to critically evaluate neuroscientific findings. Overall, we hope to provide a comprehensive introduction and practical guidance for students who are interested in the research field of "Educational Neuroscience"

### **Gazing at the learning brain: a reflective and interactive overview of neuroscience and education**

**Presenting Author:**Stephan Vogel, University of Graz, Austria; **Presenting Author:**Dietsje Jolles, Universiteit Leiden, Netherlands; **Presenting**

**Author:**Giannis Kostikas, National & Kapodistrian University of Athens, Greece

"Educational Neuroscience" refers to an interdisciplinary research field that explores the connection between education and neurocognitive/neurobiological mechanisms of learning and brain plasticity. Important insights on how the brain changes as a consequence of learning and basic principles of how the brain learns have emerged from this joined collaboration. In this workshop, we will provide an interactive introduction to the field of educational neuroscience, how to become a neuroscientist and how to interpret neuroscientific literature. In the beginning of this workshop, we will first introduce the basic principles of functional magnetic resonance imaging (fMRI), Electroencephalography (EEG) and transcranial Electromagnetic Stimulation (tES) and how these techniques can be used in- and outside the classroom to investigate mechanisms of learning. We will also provide a critical look at "what" and "what cannot" be gained from using these techniques. Becoming a neuroscientist is a challenging endeavor and different choices have to be made when considering such a career. In the second part of this workshop, we will have a look at different routes for becoming a neuroscientist and at practical strategies to build a neuroscientific research career. We will also provide personal examples of our own trajectories and the opportunity to make specific inquiries in smaller Q & A groups. Reading and interpreting neuroscientific findings can be daunting. The final part of this workshop aims to familiarize participants with the unique language and specifics of neuroscientific publications. Using concrete examples from recently published articles, the objective of this exercise is to increase the scientific literacy of the participants and to further help to critically evaluate neuroscientific findings. Overall, we hope to provide a comprehensive introduction and practical guidance for students who are interested in the research field of "Educational Neuroscience"

## Workshops II 5

21 August 2023 09:00 - 10:30

UOM\_CH

JURE Invited Workshop

### **Publishing a paper: The author, the reviewer, and the editor**

**Keywords:** Communication Skills, Researcher Education, Synergies between Learning / Teaching and Research, Writing/Literacy

**Interest group:**

**Chairperson:** Katerina Nerantzaki, Aristotle University of Thessaloniki, Greece

Publishing one's research contributes to the advancement of science, communication between researchers, developing knowledge and skills in one's domain of expertise, getting feedback by peers, and getting to know the standards in one's field of expertise. It is also a prerequisite for getting a Ph.D. and academic promotion. The workshop will highlight the steps to be taken by authors when writing and submitting a paper, the role of reviewers, and the decision process by the editor. Examples will be provided and discussed.

### **Publishing a paper: The author, the reviewer, and the editor**

**Presenting Author:**Anastasia Efklides, Aristotle University of Thessaloniki, Greece

Publishing one's research contributes to the advancement of science, communication between researchers, developing knowledge and skills in one's domain of expertise, getting feedback by peers, and getting to know the standards in one's field of expertise. It is also a prerequisite for getting a Ph.D. and academic promotion. The workshop will highlight the steps to be taken by authors when writing and submitting a paper, the role of reviewers, and the decision process by the editor. Examples will be provided and discussed.

## Workshops II 6

21 August 2023 09:00 - 10:30

UOM\_A05

JURE Invited Workshop

### **Presenting at Conferences: Preparing a Proposal and Preparing and Giving a Presentation**

**Keywords:** Communication Skills, Competencies, Researcher Education, Synergies between Learning / Teaching and Research

**Interest group:**

**Chairperson:** Evropi Efthymiadou, Aristotle University of Thessaloniki, Greece

There are many benefits to presenting your research at conferences. It creates a deadline to complete research, provides an opportunity to interact with established researchers in the field, and gives visibility to your research. Attending conferences also gives you insight into current research in your field. This workshop is designed to provide guidance in: 1) how to find conferences that are appropriate for your research, 2) how to write a proposal, including selecting which findings to present, 3) and how to prepare and deliver a presentation. In the workshop we will discuss strategies for organizing the presentation and situating it in current research in the field, summarizing findings, and using the discussion to highlight the contribution of the study. We will also discuss how to create slides that are clear, sufficiently detailed, and can be processed in a brief amount of time.

### **Presenting at Conferences: Preparing a Proposal and Preparing and Giving a Presentation**

**Presenting Author:**Deborah Mudd, Stanford University, United States

There are many benefits to presenting your research at conferences. It creates a deadline to complete research, provides an opportunity to interact with established researchers in the field, and gives visibility to your research. Attending conferences also gives you insight into current research in your field. This workshop is designed to provide guidance in: 1) how to find conferences that are appropriate for your research, 2) how to write a proposal, including selecting which findings to present, 3) and how to prepare and deliver a presentation. In the workshop we will discuss strategies for organizing the presentation and situating it in current research in the field, summarizing findings, and using the discussion to highlight the contribution of the study. We will also discuss how to create slides that are clear, sufficiently detailed, and can be processed in a brief amount of time.

#### **Workshops II 7**

21 August 2023 09:00 - 10:30

UOM\_A10

JURE Invited Workshop

#### **Opening the Black Box of School Interventions**

**Keywords:** Bullying, Communities of Learners and/or Practice, Competencies, Researcher Education

**Interest group:**

**Chairperson:** Meropi Simou, Aristotle University of Thessaloniki, Greece

Good methodological practices from the design to the evaluation

This workshop aims to strengthen methodological and practical skills for conducting intervention studies in schools. Intervention studies play a crucial role in education research. Yet, researchers often overlook several key-factors, leading to weakened conclusions and limited generalizability of their findings. The resulting "black box" of intervention studies also has broader consequences for scientific knowledge of underlying processes and effective components of school interventions. Failing to consider key-aspects of intervention studies often result in a waste of time, human, and financial resources and hinders overall progress in the field of education research. This workshop intends to provide recommendations to "open the black box of school interventions" from the early stages of research projects. In this workshop, we will focus on both methodological and practical aspects:- testing the intervention mediators based on a clear and sound theory of change- isolating the intervention components in separate intervention conditions- assessing and associating implementation with the intervention outcomes- collaborating with schools and teachers: challenges and pitfalls- data collection and anticipating journals' requirements- supplementary materials and Transparency and Openness (TOP) Guidelines The workshop will include a presentation combined with examples. There will be time for questions and discussion at the end of the workshop. Participants are encouraged to think about their (current or future) intervention study project in advance to transpose the content of the workshop to their own project easily. This workshop is intended primarily for behavioral and socio-emotional interventions (e.g., bullying, violence, substance use, conflict resolution) but can also be relevant to health or learning intervention.

#### **Opening the Black Box of School Interventions**

**Presenting Author:**Chloé Tolmatcheff, University of Groningen, Netherlands

Good methodological practices from the design to the evaluation

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#### **Session D 1**

21 August 2023 11:00 - 12:30

UOM\_A07

Single Paper

Assessment and Evaluation, Cognitive Science, Culture, Morality, Religion and Education

#### **Studies in Secondary Education**

**Keywords:** Attitudes and Beliefs, Comprehension of Text and Graphics, Conceptual Change, Cultural Diversity in School, Educational Attainment, Large-scale Assessment, Metacognition, Misconceptions, Primary Education, Qualitative Methods, Quantitative Methods, Reading, Secondary Education

**Interest group:** SIG 01 - Assessment and Evaluation, SIG 02 - Comprehension of Text and Graphics, SIG 03 - Conceptual Change, SIG 19 - Religions and Worldviews in Education

**Chairperson:** Felipe Sanchez, Lancaster University, United Kingdom

#### **The predictive accuracy of Dutch end of primary school tests for educational attainment in 9th grade**

**Keywords:** Educational Attainment, Large-scale Assessment, Primary Education, Secondary Education

**Presenting Author:**Nynke Douma, University of Groningen, Netherlands; **Co-Author:**Matthijs Warrens, Rijksuniversiteit Groningen, Netherlands; **Co-**

**Author:**Erik Fleur, Dienst Uitvoering Onderwijs, Netherlands; **Co-Author:**Monique Dijks, University of Groningen, Netherlands; **Co-Author:**Hanke Korpershoek, University of Groningen, Netherlands

Three attainment tests commonly used for the transition from primary to secondary education in the Netherlands (CET, IEP and R8) were compared on their predictive accuracy of educational attainment in 9th grade. The predictive accuracy of the tests was also investigated for particular track recommendations, using multiple samples of population data, of around 160,000 students. For the two most recent cohorts, CET was overall a more accurate predictor of educational attainment in 9th grade than R8, which in turn was a more accurate predictor than IEP. All three attainment tests had only mediocre to acceptable predictive accuracy overall. Furthermore, all three tests had very poor predictive accuracy for some of the track recommendations: for these track recommendations many students attained either a lower or higher educational level than the advice following from these attainment tests. A comprehensive study of the rules used to convert the test scores to particular track recommendations is highly recommended.

#### **Historical narratives among students and their meaning-making function**

**Keywords:** Attitudes and Beliefs, Cultural Diversity in School, Qualitative Methods, Secondary Education

**Presenting Author:**G.M. Gaans, University of Amsterdam, Netherlands

*People use narratives to give meaning to life by connecting present, past and future in a meaningful way. These narratives are studied from various disciplines, including history and religious studies. Insights from both disciplines are rarely combined. This research project explores the possibility of using strategies from spiritual care to uncover the meaning-making layer of stories students tell about the shared past. Using newly designed data collection tools, students explicate*

*their narratives about a shared past. These narratives are analysed qualitatively to characterize and understand the way in which they give meaning and how they help the students to orientate themselves in their lives and towards their future. The designed methods were applied among high-school students of 15 and 16 years old. The analysis showed that students with a more explicit social self-identification used more coherent narratives about the past and connected these to their core values and foundational views of people and world. Because of the latter connection, these stories also have meaning. These insights may help to better understand the sensitive nature of some historical topics in classroom situations.*

#### **A Contribution to Conceptual Change Research: Investigating of Students' Mental Models of Force**

**Keywords:** Conceptual Change, Misconceptions, Quantitative Methods, Secondary Education

**Presenting Author:**Eleni Kanellia, Aristotle University of Thessaloniki, Greece; **Co-Author:**Dimitrios Stamovlasis, Aristotle University of Thessaloniki, Greece

This study aims to contribute to the understanding the nature of children's knowledge before adopting the scientific view. Specifically, the hypothesis whether pupils' pre-existing conceptions of physical phenomena are coherent or fragmented and to what extent they could be explained by cognitive variables from Neo-Piagetian theory. The two cognitive variables implemented were Logical Thinking and Field Dependence/Independence, which were assessed via the corresponding psychometric test, while, students' mental representations about force were assessed via the Force-RQ (Force Representations Questionnaire). Subsequently, Latent Class Analysis (LCA) was used to identify distinct groups of students sharing similar patterns of responses. The present research is primarily of theoretical interest, because the answer to the ongoing scientific debate between coherent and fragmented knowledge hypotheses, determines the pedagogical approach and will contribute to the improvement of the teaching and learning processes. *Keywords:* conceptual change, Neo-Piagetian Theory, Latent Class Analysis (LCA), coherent and fragmented knowledge

#### **To Read Digitally or Not? Effects on Reading Time, Comprehension, and Calibration in Adolescents**

**Keywords:** Comprehension of Text and Graphics, Metacognition, Reading, Secondary Education

**Presenting Author:**Angelica Ronconi, University of Padova, Italy; **Co-Author:**Antonio Calcagni, University of Padova, Italy; **Co-Author:**Lucia Mason, University of Padova, Italy

Recent meta-analyses mainly focused on higher education students show that reading comprehension is better on paper than on screen for expository texts. Only few studies are available on younger students, who are increasingly involved with digital texts in learning contexts. This study aimed to investigate whether students' reading self-efficacy (SE) moderates the effect of reading medium (paper vs. screen) on reading time (RT), text comprehension and knowledge transfer, and calibration of performance in secondary-school students. Tenth graders (N=51) read two scientific expository texts, taken from textbooks, one on paper and the other on screen. The topic of the two texts were earthquakes and volcanos. RT was recorded, learning from text was assessed through multiple-choice comprehension questions and open-ended transfer questions. Participants were also asked to self-evaluate their comprehension performance. Calibration bias was computed as the difference between students' metacognitive judgment and actual performance. We controlled for prior topic knowledge, comprehension ability, and reading SE. A model comparison was performed to select the most plausible statistical model, given our data. Reading self-efficacy was not a relevant moderator of the effects of reading medium, as the 2-way interaction did not improve the fit of the models. Results showed that adolescent students read the text longer on screen. No significant difference between media emerged for text comprehension and transfer questions. Contrary to our expectation, students were more accurate in their self-evaluation of performance when reading digitally, as they underestimated less their performance compared to the paper condition. Self-efficacy positively predicted text comprehension.

#### **Session D 2**

21 August 2023 11:00 - 12:30

UOM\_A05

Single Paper

Assessment and Evaluation, Culture, Morality, Religion and Education, Lifelong Learning, Motivational, Social and Affective Processes

#### **Citizenship Education**

**Keywords:** Assessment Methods, Attitudes and Beliefs, Citizenship Education, Competencies, Conceptual Change, Foreign and Second Language Acquisition, Lifelong Learning, Migrant / Refugee and Minority students, Morality and Moral Development, Multicultural Education, Primary Education, Qualitative Methods, Secondary Education

**Interest group:** SIG 01 - Assessment and Evaluation, SIG 13 - Moral and Democratic Education

**Chairperson:** Yaroslav Opanasenko, Estonia

#### **Language teaching for marginalized adults – policy and practice in education and research**

**Keywords:** Citizenship Education, Foreign and Second Language Acquisition, Lifelong Learning, Migrant / Refugee and Minority students

**Presenting Author:**Karin Ingesson, Jönköping University, Sweden

This paper outlines my PhD project and presents the aims, the theoretical and methodological framework, and the four studies that I propose to undertake as part of my project. The overarching aim is to illuminate a blind spot: the issues regarding institutional language education for adult migrants and refugees in Sweden and how the mission to teach "democratic values" and themes about "being an active citizen" is integrated into language teaching in Sweden's school system, with a "one-school-for-all" agenda. My aim is to present these preliminary ideas and receive feedback from other junior and senior scholars working in the area of learning and instruction generally, and with issues of language education for adults specifically. Using the theoretical framework Second Wave of Sothern Perspective (SWaSP), and building on sociocultural and decolonial theory, I will study language teaching for refugees and immigrants through four studies. These studies will create knowledge about how scholars in other national contexts describe that double mission of language teaching and ideological substance teaching, how this democratic mission is mediated in the Swedish classroom, how it is received by the students themselves, and, finally, how Swedish language education policy can be viewed in light of the data from the three previous studies.

#### **Children's collective laughter – hopeful events for democratic living in a grade one classroom.**

**Keywords:** Citizenship Education, Conceptual Change, Primary Education, Qualitative Methods

**Presenting Author:**Lene Sirevåg, Institute of Education, University of Agder, Norway

The aim of this paper is to explore laughter as a corporeal event and part of a democratic way of living together in a grade one classroom. Through analyzing incidents where children's collective laughter interrupts institutional order I argue for an alternative reconceptualising of democratic education in the field of Primary Education. Prior research suggests that teacher's often approach democracy as deliberative or liberalistic. This study draws on alternative conceptualizations of democracy as communal experiences of equality, and the possibility of agonistic pluralism as suggested by Mouffe. Additionally, Vlieghe's conceptualization of laughter as 'democracy of the flesh' in education, builds the theoretical springboard for the empirical analysis. The study has an overall abductive approach, and the empirical material is collected through a one year fieldwork in a Norwegian primary school, including participant observation following children during their school day. To map the corporal dimension rhythm analysis by Kofoid is applied on 32 situations where laughter occurs. Preliminary findings suggest that children's laughter creates fissures in the classroom order and manifests a strong corporal and collective presence driven by the intensity of laughing bodies connecting. An equalising event where children and teachers become lost in the laughter and for a brief moment immerse in a collective of equals. Reinterpreting children's collective laughter as endeavors to encourage democratic living allows legitimize laughter importance besides its well-established role in learning and well-being. However, a theoretical expansion of teachers and policies understanding of laughter and democracy is necessary to fully establish possibilities to engage children's laughter as part of democratic education.

#### **Right-wing attitudes of pupils in a study on conceptions of and identification with Europe**

**Keywords:** Attitudes and Beliefs, Citizenship Education, Morality and Moral Development, Secondary Education

**Presenting Author:**Saskia Langer, Trier University, Germany

In a self-conducted survey on pupils' conceptions of and identification with Europa in Rhineland-Palatinate, Germany, a group of pupils stood out, that articulated right-wing opinions and used far-right terminology when answering open ended questions. In the context of a shift to the right in many European countries, the open declaration of right-wing values among pupils is a phenomenon that should be examined further. Therefore, this single paper provides the results of an analysis of this group of pupils, that used right-wing terminology, and a comparison of their opinions to the other secondary-school students surveyed in regards to opinions about the EU, conceptions on Europe, identification with Europe and transnational activities in the border region between France, Germany, Belgium and Luxembourg. The results are then placed into the discourse of right-wing argumentation about Europe.

#### **Religious Literacy of Estonian Basic and Upper Secondary School Graduates**

**Keywords:** Assessment Methods, Citizenship Education, Competencies, Multicultural Education

**Presenting Author:** Aleksandra Sooniste, University of Tartu, Estonia

Estonia is one of the most secular countries in the world and Religious education in formal education in public schools remains only of marginal significance being offered in less than 2% of state or municipal schools suggesting that both intercultural and religious knowledge and competencies are acquired in other subjects and cross-curricular themes. While the importance of religious literacy is becoming increasingly evident in the context of formal education in the context of globalisation, there is still almost no discussion about including the content that promotes religious literacy in the national curricula of formal education. This presentation examines the outcome of the survey about the religious literacy of Estonian basic and upper secondary school graduates to determine the degree of different components (dispositions, knowledge and skills) of religious literacy and identify the strengths and shortcomings of obtaining religious literacy without a specific learning content

#### **Session D 3**

21 August 2023 11:00 - 12:30

UOM\_A04

Single Paper

Learning and Instructional Technology, Teaching and Teacher Education

#### **Teachers' Professional Development**

**Keywords:** Anxiety and Stress, Computational Thinking, Cultural Diversity in School, Eye Tracking, Learning Approaches, Mixed-method Research, Pre-service Teachers, Primary Education, Resilience, Teacher Professional Development, Teaching/Instructional Strategies

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

**Chairperson:** Touria Jouilla, University of Aberdeen, Ireland

#### **How do different kind of resources matter during school based long-term internships?**

**Keywords:** Anxiety and Stress, Pre-service Teachers, Resilience, Teacher Professional Development

**Presenting Author:** Hanna-Sophie Homann, Leuphana University Lüneburg, Germany

The projected study aims to investigate the predictive influence of individual, task-related and environment-related resources for exhaustion and engagement in preservice teachers (PST) during their long-term internships. Long term internships have mainly been researched in the context of the student's competencies and professional development. Less is known about psychological aspects, work-related strains and resources during this sensitive time in a teacher's education. On the basis of the Job-Demand-Resources-Model (Bakker & Demerouti, 2007) the present study wants to analyse the association between the personal resource of self-efficacy, task-related sense of coherence and the environment-related resources of mentoring. More than that, the planned study is asking in which way these resources are interacting with each other and whether mentoring can attenuate the link between both self-efficacy, task-related sense of coherence and exhaustion and engagement at the end of the internship. 178 teaching master students completed an online self-questionnaire at the beginning and end of their 18-week long-term internship. It is hypothesized that self-efficacy and task-related sense of coherence will alleviate symptoms of exhaustion and stimulate engagement. Additionally, it is hypothesized that the resource of mentoring will moderate this effect. In this way this study wants to contribute to a better understanding of what can function as a resource during the demanding time of the long-term internship, especially with regard to the mostly unexplored resource of having a task-related sense of coherence.

#### **Prompts vs. Specific Task Instruction: An Eye-Tracking Study to Promote Professional Vision**

**Keywords:** Eye Tracking, Pre-service Teachers, Teacher Professional Development, Teaching/Instructional Strategies

**Presenting Author:** Sylvia Gabel, Universität Augsburg, Germany; **Co-Author:** Andreas Gegenfurtner, University of Augsburg, Germany

Professional vision as a key competency in the teaching profession requires high attention and is often challenging for pre-service teachers. Disturbing situations are one of many challenges teachers are confronted with, where quick and accurate perception is needed. Implementing videos in pre-service teacher programs are effective formats for developing teacher professional vision. Based on previous investigations that tested the effectiveness of minimal interventions to support professional vision and classroom management competencies of pre-service teachers, this study explored whether providing specific task instructions before watching the video or providing prompts during the video makes a difference in terms of noticing classroom management situations. A pilot study analyzed this minimal intervention with a sample of 85 pre-service teachers with respect to the number, accuracy, and velocity of identified classroom management situations. In a mixed method approach, participants were asked to click a button when they perceived a classroom management-relevant situation in the video. Afterwards, they explained in an interview why they considered these situations as relevant. T-tests revealed that both interventions tended to produce a similar attention-guiding effect on noticing. In a future study, we aim to replicate these findings using eye tracking methodology to examine the number of fixations, time to first fixation, and perceptual relevance. Results will be presented in the conference. Implications for educational and empirical practice about using videos in university courses and their instructional setting are discussed.

#### **Comparing three different approaches to teach programming and computational thinking in 5th grade.**

**Keywords:** Computational Thinking, Learning Approaches, Primary Education, Teaching/Instructional Strategies

**Presenting Author:** Kevin Sigayret, Université Paul Valéry Montpellier 3, France; **Co-Author:** Nathalie Blanc, Université Paul Valéry Montpellier 3, France; **Co-Author:** André Tricot, Université Paul Valéry Montpellier 3, France

Programming and computational thinking are gradually being integrated into school curricula. Many researchers believe that this learning would have a positive impact on certain abilities essential to any citizen in the decades to come, particularly in relation to problem solving abilities. However, there are many ways, both plugged-in and unplugged, to teach programming in school and very few studies attempted to compare these different approaches. For this reason, we conducted an experiment with 319 Grade 5 students in France. They were assigned to three experimental conditions: learning with educational programming software (Scratch-only group), learning with software and an educational robot (Scratch + Thymio group) and unplugged learning (Unplugged group). Our aim was to examine whether significant differences can be observed between the three groups regarding knowledge and understanding of fundamental concepts in programming, ability to solve algorithmic problems, motivation, self-belief and attitude toward science. Our main results show that the Scratch-only group exhibited better learning performance compared to the other groups, with the lowest performance for the unplugged group. Explanations could be sought by looking at the influence of the feedback allowed by the programming software and by evaluating the cognitive load associated with the different learning situations. A plugged-in approach also seems to benefit to students' motivation, compared to the unplugged group which showed a significant drop in motivation at the end of the sessions, but this positive impact is only observable with boys.

#### **An Eye Tracking-Study: Attention Distribution and Attitudes of Teachers in Heterogenous Classrooms**

**Keywords:** Cultural Diversity in School, Eye Tracking, Mixed-method Research, Pre-service Teachers

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

Research findings indicate that students with a migrant background experience less recognition from teachers than students without a migrant background in

German classrooms. Studies also suggest that teachers have more negative attitudes toward students with a migrant background. Using a sample of 83 pre-service teachers, this eye-tracking study sought to explore whether these recognition and attitudinal inequalities also exist on a visual attentional level. When watching classroom videos, how often and how long do pre-service teachers fixate students with and without a migrant background? Participants watched a video showing classroom interactions while their eye movements were recorded. Afterwards, participants were interviewed about (a) their thoughts how well the teacher in the video worked with students and (b) their own experiences with teaching migrant background students in school internships. Participants also completed a questionnaire measuring their explicit attitudes toward students with a migrant background. Findings of these mixed-methods eye-tracking study will be presented at the JURE conference. Overall, we hope that these analyses contribute to a deepened understanding of biases in pre-service teacher professional vision in heterogeneous school contexts.

#### Session D 4

21 August 2023 11:00 - 12:30

UOM\_A09

Single Paper

Cognitive Science, Learning and Instructional Technology, Learning and Special Education

#### Mathematics and Numeracy

**Keywords:** Achievement, Classroom Assessment, Mathematics/Numeracy, Meta-analysis, Primary Education, Problem Solving, Science and STEM, Special Education, Teaching/Instructional Strategies, Tool Development

**Interest group:** SIG 15 - Special Educational Needs, SIG 18 - Educational Effectiveness and Improvement, SIG 20 - Inquiry Learning

**Chairperson:** Elissavet Papageorgiou, Delft University of Technology, Netherlands

#### Using learning progress monitoring to promote scholastic skills? A meta-analysis

**Keywords:** Classroom Assessment, Mathematics/Numeracy, Meta-analysis, Teaching/Instructional Strategies

**Presenting Author:** Amelie Fuchs, Leibniz Institute for Science and Mathematics Education (IPN), Germany; **Co-Author:** Anika Radkowsch, Leibniz Institute for Science and Mathematics Education (IPN), Germany; **Co-Author:** Daniel Sommerhoff, Leibniz Institute for Science and Mathematics Education, Germany

Individualised, learner-centred teaching requires the continuous monitoring of students' learning status and individual learning progress. A promising approach that shows an individuals' development in learning over time is *learning progress monitoring* (LPM). This involves repeated, short tests on the same content, by which individual learning progress can be measured and reported to teachers (and students). Up to now, there are only a few studies on the effectiveness of LPM, which have produced a heterogeneous and rather unsystematic body of research due to different settings and implementations of LPM. Although initial findings suggest that LPM may have a positive impact on student achievement, there is also a wide heterogeneity in prior results. Therefore, we conducted a meta-analysis to answer the following questions: (i) To what extent does LPM impact students' development of scholastic skills? (ii) To what extent does the effectiveness of LPM depend on characteristics of the sample, characteristics of the LPM, additional instructional measures, and skill domain? To answer both questions, we conducted two systematic literature searches, the initial one focusing solely on mathematics and the latter including all domains. For mathematics, we included 11 studies with a total of 3,277 students. These studies show a medium positive effect ( $g = .54$ ) of LPM on students' mathematical skills. The results of the meta-analysis further show that there is a need for future research on the specific mechanisms leading to the positive effects of LPM and the factors influencing them.

#### Individual Differences in Mathematical Word Problem-Solving: A Systematic Review and Meta-Analysis

**Keywords:** Mathematics/Numeracy, Meta-analysis, Primary Education, Problem Solving

**Presenting Author:** Terhi Vessonen, University of Helsinki, Finland; **Co-Author:** Maria Dahlberg, Åbo Akademi University, Faculty of Education and Welfare Studies, Finland; **Co-Author:** Heidi Hellstrand, Åbo Akademi University, Faculty of Education and Welfare Studies, Finland; **Co-Author:** Anna Widlund, Åbo Akademi University, Faculty of Education and Welfare Studies, Finland; **Co-Author:** Patrik Söderberg, Åbo Akademi University, Faculty of Education and Welfare Studies, Finland; **Co-Author:** Johan Korhonen, Åbo Akademi University, Faculty of Education and Welfare Studies, Finland; **Co-Author:** Pirjo Aunio, University of Helsinki, Finland; **Co-Author:** Anu Laine, University of Helsinki, Finland

Many individual characteristics such as language skills, working memory and math anxiety have been shown to be related to mathematical word problem-solving. However, in prior research individual characteristics have been studied in isolation from one another, for example limiting their scope into academic and cognitive skills only. For being able to identify and evaluate the effects of individual characteristics related to mathematical word problem-solving skills holistically, a systematic review and meta-analysis is required. The objective of this systematic review and meta-analysis is to identify and evaluate the effects of individual characteristics related to elementary school-aged children's mathematical word problem-solving skills. The systematic review is conducted according to the Preferred Reporting Items for Systematic reviews and Meta-Analyses (PRISMA). Five electronic databases were searched to find relevant records. All studies identified in the database search undergo rigorous screening in two phases, abstract and full-text phase. Studies investigating the effects of one or more individual characteristics on elementary school-aged (7-12-year-olds) children's mathematical word problem-solving skills are considered eligible for the current review. In addition, studies are required to be peer-reviewed empirical and quantitative journal articles published in English. Studies identified as eligible for the review will undergo methodological quality assessment for minimizing the risk of bias. Finally, a meta-analysis with moderator analyses will be performed. The database search yielded in 6032 records after duplicates were removed. After reviewing 500 records, preliminary results indicate that executive functions, emotional intelligence, motivation and mathematical and reading difficulties are related to mathematical word problem-solving.

#### Psychometric Evidence of an Integrated STEM-based Mathematical Problem-Solving Test

**Keywords:** Mathematics/Numeracy, Problem Solving, Science and STEM, Tool Development

**Presenting Author:** Ijtihadi Kamilia Amalina, University of Szeged, Doctoral School of Education, Indonesia; **Co-Author:** Tibor Vidákovich, University of Szeged, Hungary

Science, Technology, Engineering, and Mathematics (STEM) interdisciplinary problem-solving is an answer to 21st-century challenges in the educational area. However, the main issue is the lack of comprehensive psychometric evidence in the integrated STEM test that emphasizes mathematics. This study aims to provide psychometric evidence of an integrated STEM-based mathematical problem-solving test. The test has a unique construct, which was a mathematics scenario essay test related to the environmental management context by applying engineering design process as well as technology through prompting items. The test was scored by three experts to assess the content and the scores were analysed by using the content validity index (CVI) and intraclass-correlation coefficient (ICC). The revised version of the test was conducted on 286 of 7 to 9 graders students in Indonesia. Inter-rater reliability and construct validity of both scenarios and prompting items by using partial credits model Rasch analysis were utilized. The results revealed the CVI and ICC values were acceptable and the content was relevant to the curriculum and students' level but it needs improvement regarding the clarity aspect. The reliability was good. All the scenarios and prompting items were fit based on weighted MNSQ values and had acceptable reliability, item discrimination, and item level of difficulties. However, there was four misfit prompting items based on unweighted MNSQ value. They were revised based on the item characteristics curve and students' errors. Administering the revised version of the misfit items in a different sample is required for further study.

#### Mathematics ability in autism: a systematic review and meta-analysis

**Keywords:** Achievement, Mathematics/Numeracy, Meta-analysis, Special Education

**Presenting Author:** Sheeza Mahak, Loughborough University, United Kingdom; **Co-Author:** Kinga Morsanyi, Loughborough University, United Kingdom; **Co-Author:** Colin Foster, Loughborough University, United Kingdom; **Co-Author:** waqas saffraz, Loughborough University, United Kingdom

The prevalence of autism spectrum disorder (ASD) is estimated at about 1% of the population and this number is increasing every passing day. With growing numbers, more children with ASD are attending schools and are being evaluated on the same standards as their neurotypical peers. Nevertheless, there is a scarcity of research conducted on mathematical skills with autistic individuals and the prevalent scientific evidence shows inconsistent results. This meta-

analysis aims to fill this gap and generate an updated answer to the question of whether any difference between the mathematical performance of ASD and typically developing (TD) individuals exists. We conducted a systematic review and meta-analysis of studies that measured the mathematical performance of individuals with ASD and TD individuals. Electronic databases were searched for studies published up to September 2022. We found 26 studies from 13 articles that met our inclusion criteria. In each study both ASD and TD groups were matched on chronological age and intelligence (verbal, non-verbal or FSIQ); in total 547 typically developing and 587 autistic individuals. We fitted a random effects model, which revealed that ASD individuals have a small but non-significant advantage over TD individuals. The meta-regression model with moderating variables (age and IQ) showed nonsignificant results ( $Q(2)=0.78$ ,  $p=0.68$ ), explaining 78% of the variance in effect sizes. The summary also shed light on the educational implications of this meta-analysis.

## Session D 5

21 August 2023 11:00 - 12:30

UOM\_A10

Single Paper

Higher Education, Motivational, Social and Affective Processes

### Self-regulated Learning in Higher Education

**Keywords:** Achievement, E-learning/ Online Learning, Feedback, Goal Orientations, Higher Education, Motivation, Problem Solving, Qualitative Methods, Self-efficacy, Self-regulated Learning and Behaviour

**Interest group:** SIG 04 - Higher Education, SIG 16 - Metacognition and Self-Regulated Learning

**Chairperson:** Katerina Nerantzaki, Aristotle University of Thessaloniki, Greece

### How Feedback Valence and Students' Self-Efficacy affect Challenge-Threat Response

**Keywords:** Feedback, Problem Solving, Self-efficacy, Self-regulated Learning and Behaviour

**Presenting Author:** Florence Lucas, Utrecht University, Netherlands; **Co-Author:** Eva Janssen, Utrecht University, Netherlands; **Co-Author:** Maaïke Taheij, Utrecht University, Netherlands; **Co-Author:** Tamara Van Gog, Utrecht University, Netherlands

The effectiveness of feedback varies widely across learners. One potential explanation for this could be that the valence of performance feedback affects participants' affective responses differently. According to the biopsychosocial model, whether students experience feedback as challenge or threat might affect their learning from it. However, not much is known about how feedback valence affects learners' challenge-threat responses, and what variables can explain individual differences in these responses to feedback. Therefore, we investigated whether the valence of performance feedback (positive or negative) affected students' challenge-threat responses towards a problem-solving task, and, additionally, whether this effect was moderated by their self-efficacy. Participants completed a series of problem-solving tasks on which they received manipulated performance feedback, being either predominantly positive ( $n=74$ ) or negative ( $n=72$ ). Prior to the tasks, they rated their self-efficacy. Afterwards, they reported their challenge-threat states towards an anticipated second cycle of similar tasks. Regression models showed that negative feedback lowered feelings of challenge and heightened feelings of threat (i.e., fear of not possessing sufficient resources, and intimidation towards the upcoming tasks), compared to positive feedback. Moreover, students with lower levels of self-efficacy reported lowered feelings of challenge and heightened fear of not possessing sufficient resources. In contrast to our expectations, there was no interaction between feedback valence and self-efficacy, suggesting that self-efficacy did not explain individual differences in affective responses to (negative) feedback. Overall, our findings demonstrate that feedback valence affects students' challenge-threat responses. Future research should investigate whether this would indeed affect students' learning from feedback.

### Balanced Coping and Student Success: Emotion and Problem Focused Coping Self-Efficacy Contributions

**Keywords:** Achievement, Higher Education, Self-efficacy, Self-regulated Learning and Behaviour

**Presenting Author:** Meg Kapil, University of Victoria, Canada; **Co-Author:** Ramin Rostampour, University of Victoria, Canada; **Co-Author:** Allyson Hadwin, University of Victoria, Canada

In academic contexts, coping self-efficacy captures student perceptions of being able to cope with academic demands. Adaptive coping is critical for student success as students are navigating a post-secondary context characterized by increased stress, academic demands, mental health concerns, and additional stress and uncertainty from Covid-19 related transitions and changes. Within the current academic context, students are struggling to manage stress, academic demands, and corresponding interactions between stress and learning. This study draws from two areas of research, self-regulated learning and stress optimization theory, for a novel understanding of student success in the current context. Variance-based Structural Equation Modeling (PLS-SEM) is employed to address the exploratory analysis that examines unique contributions of two kinds of coping self-efficacy; (a) problem-focused (PF-CSE) and (b) emotion-focused (EF-CSE). Social-emotional and academic outcomes during studying (e.g., academic well-being, self-efficacy for SRL, and academic challenges) in a sample of university students ( $N=221$ ) are examined. Results show; (a) EF-CSE positively predicts two dimensions of Academic Well-Being (psychological, and social well-being), (b) PF-CSE can predict lower levels of academic challenges, (c) EF-CSE can predict lower levels of academic challenges beyond the contributions of PF-CSE, (d) PFC and EFC predict different dimensions of self-efficacy for using self-regulated learning practices. Findings indicate that EF-CSE and PF-CSE are unique predictors of students' success outcomes. Implications for theory and practice are discussed with results supporting inclusion of problem focused and emotion focused coping self-efficacy. Understanding coping capacity perceptions at university, where stress is expected, has important implications for students, instructors, and institutions.

### Fostering motivation and motivational regulation in a combined training in higher education

**Keywords:** E-learning/ Online Learning, Higher Education, Motivation, Self-regulated Learning and Behaviour

**Presenting Author:** Sophie von der Mülbe, University of Augsburg, Germany; **Co-Author:** Markus Dresel, University of Augsburg, Germany

Many students in higher education experience a decline in their motivation to study. This lack of motivation is often related to a lack of motivational regulation and can negatively impact study experience and behaviour. Going beyond previous motivational training approaches, the present study aimed at designing and evaluating a training program that promotes motivation directly as well as fosters the use of motivational regulation strategies for STEM students in order to positively impact expectancy, value, and the use of motivational regulation strategies as well as procrastination, study satisfaction, and dropout intentions. The training consisted of nine 30-minute training sessions in a digital setting over the course of the semester. Data from 62 students is available for pretest and posttest. Based on random allocation 37 of these students were part of the training group, while the control group contained 25 students. While no significant training effects for expectancy of success, procrastination, and dropout intentions could be found, significant training effects were observed for the subjective value of studying, the use of motivational regulation strategies and study satisfaction. In conclusion, since the training impacted study experience and behaviour at least partially as intended, the results provide evidence for the general usefulness of the presented approach to link fostering motivation directly with fostering motivational regulation in a higher education motivational training programme.

### University students' professional goals journey: from goal-setting to goal achievement.

**Keywords:** Goal Orientations, Higher Education, Qualitative Methods, Self-regulated Learning and Behaviour

**Presenting Author:** Heleen van Ravenswaaij, UMC Utrecht, Netherlands

Self-regulation, and in particular setting and achieving goals, are important for academic success. The aim of the current study was therefore to explore how students worked on self-set personal goals and monitored their action plan and how this related to their self-regulative skills. After completing a goal-setting assignment, 26 first-year, graduate students participated in a longitudinal interview study of three interviews over the course of a year. The results showed that students differed in the content of the goals they formulated and whether and how they worked on their goals. A group of students worked consistently on their self-set goal, another group changed their goal throughout the year, and a third group forgot their goal or did not work on their goal. Students appeared to have multiple other priorities next to their goal at the start of the program, which became less towards the end of their first year. Students asked for little help and

assessed their goal achievement using multiple information sources. These results indicate that students need support when working on self-set goals, even though they might not be aware of this themselves. The interviews were for example viewed by students as useful moments to reflect on their professional development. This research furthermore adds to the literature on self-regulation activities in graduate education.

#### Session D 6

21 August 2023 11:00 - 12:30

UOM\_A06

Single Paper

Higher Education, Learning and Social Interaction, Lifelong Learning

#### Learning Analytics

**Keywords:** Computer-assisted Learning, Developmental Processes, Educational Technologies, Engagement, Higher Education, Learning Analytics, Lifelong Learning, Peer Interaction, Teaching/Instructional Strategies

**Interest group:** SIG 07 - Technology-Enhanced Learning And Instruction, SIG 10 - Social Interaction in Learning and Instruction, SIG 14 - Learning and Professional Development

**Chairperson:** Maxi Eileen Brausch-Böger, Technical University of Munich, Germany

#### Learners' Presence Patterns and Their Relationship with Peer Feedback in Digital Social Reading

**Keywords:** Computer-assisted Learning, Engagement, Learning Analytics, Peer Interaction

**Presenting Author:** Xiaoshan Huang, McGill University, Canada; **Co-Author:** Shan Li, Lehigh University, United States; **Co-Author:** Tingting Wang, McGill University, Canada; **Co-Author:** Susanne Lajoie, McGill University, Canada

The benefit of the digital social reading platform is two-folded: first, it enables teachers to keep track of students' learning behavior, including actual reading time, annotations, and the number of posts in interaction with peers; second, it provides students with a flexible panel to share thoughts, exchange ideas, and even co-construct knowledge throughout the interaction. This study explored undergraduate students' cognitive and social presence in written comments as they engaged in asynchronous digital social reading activities. The participants were from a large North American University. They were asked to comment on weekly readings throughout a semester in Perusall, a digital social reading platform. We used a text mining tool, named the Linguistic Inquiry and Word Count (LIWC), to analyze learners' written comments. We identified linguistic indicators for social presence and cognitive presence, respectively. We then conducted a latent profile analysis (LPA) to examine whether students demonstrated specific patterns of social and cognitive presence. Our results suggested that learners showed two presence profiles, i.e., high and low presence patterns. Furthermore, we found that students with high cognitive and social presence were more likely to receive peer feedback than the low presence group. This study was the first to examine learners' social and cognitive presence and their relationship with peer feedback in digital social learning. This study provides practical implications for instructors regarding promoting interaction among students in online learning communities, especially in social digital learning contexts.

#### Towards becoming a Professional Teacher with the support of Learning Analytics

**Keywords:** Developmental Processes, Educational Technologies, Learning Analytics, Lifelong Learning

**Presenting Author:** Tiit Leibur, University of Tartu, Estonia; **Co-Author:** Katrin Saks, University of Tartu, Estonia

Keeping teachers in the profession, and at the same time supporting them, is a pain point in today's society. Problem is that there is currently no environment that would support the teacher's lifelong learning or give them an overview of their professional developmental path (visually, in percentage, verbal) and the process of applying for qualifications is time- and labour-intensive, for teachers as well as for professional assessors. The study aimed to identify how the teachers' continuous self-development process can be supported through a technological application that includes the Learning Analytics (LA) module - supporting the teacher as a learner (feedback), and conceptualizing the enhancement of their professional development (PD). The current study, relying on the model of a teacher as a Learning Professional and the model of LA, analysed opportunities offered by technology to support teachers' self-development, self-evaluation and feedback on teacher competencies. Data on teachers' perceptions of the application's functionalities were collected from 30 teachers through focus group interviews. The research revealed that the technical application (previously created by the authors) together with the LA module enables teachers to continuously monitor and analyse both their teaching practice and their PD. At the same time, it allows the teacher to develop themselves faster and more effectively (for feedback and recommendations) and to improve their qualifications. At the same time, it facilitates the work of the professional assessors and allows the teacher to constantly monitor their competencies and professional competencies, which can then be further developed or supplemented if necessary.

#### The role of learning analytics in supporting teachers in hybrid learning environments

**Keywords:** Educational Technologies, Higher Education, Learning Analytics, Teaching/Instructional Strategies

**Presenting Author:** Rogers Kaliisa, University of Oslo, Faculty of Education, Norway; **Co-Author:** Crina Damsa, University of Oslo, Norway

Teaching in hybrid learning environments (e.g., involving face-to-face and online activities) is often a challenging task for teachers. The aim of this contribution is to illustrate the potential of learning analytics (LA) in supporting teachers' learning design roles (e.g., planning learning activities) in hybrid learning environments. Using data from seven asynchronous online discussions in a hybrid bachelor's course, we analyzed student interactions (N=34) and the content of the weekly online discussions using social network analysis (SNA) and automated discourse analysis. SNA metrics identified different sub-groups of students (e.g., most active vs. least active), while the content analysis of the discussion forum posts provided a nuanced view of the main concepts used by the students. Based on these findings and in collaboration with teachers, we designed a LA dashboard (Canvas discussion analytics dashboard [CADA]) that visualizes the participation, social interactions, concepts, and the sentiment attached to students' online discussion posts on a need-to-know basis. We evaluated CADA using 10 in-depth interviews with university teachers who used it practice. The findings showed that CADA provided teachers with an easier-to-understand visual representation of large amounts of student information (e.g., misconceptions about a topic) during online discussions. This information enabled teachers to monitor the quality of the online discourse, which they leveraged to make minimal learning design changes and to customize face-to-face classroom activities. While some teachers expressed a need for CADA to include actionable insights, the results underline the potential of LA in supporting teachers' learning design roles in hybrid learning environments.

#### Session D 7

21 August 2023 11:00 - 12:30

UOM\_A11

Single Paper

Cognitive Science, Learning and Social Interaction, Learning and Special Education

#### Reading, Writing and Numeracy Development

**Keywords:** At-risk Students, Early Childhood Education, Educational Neuroscience, Emotion and Affect, Learning and Developmental Difficulties, Mathematics/Numeracy, Primary Education, Quantitative Methods, Reading, Resilience, Secondary Education, Writing/Literacy

**Interest group:** SIG 10 - Social Interaction in Learning and Instruction, SIG 15 - Special Educational Needs, SIG 22 - Neuroscience and Education

**Chairperson:** Laura Landi, Università di Modena e Reggio Emilia, Italy

#### Cerebral lateralization for writing in children at risk for dyslexia using fTCD ultrasonography

**Keywords:** At-risk Students, Educational Neuroscience, Learning and Developmental Difficulties, Writing/Literacy

**Presenting Author:** Anastasia-Konstantina Papadopoulou, National & Kapodestrian University of Athens, Biomedical Research Foundation of the Academy of Athens, Greece; **Co-Author:** Filippos Vlachos, Department of Special Education, University of Thessaly Volos, Greece, Greece; **Co-Author:** Panagiota

Pervanidou, Laboratory of Developmental Psychophysiology and Stress Research, Unit of Developmental and Behavioral Pediatrics, First Department of Pediatrics, School of Medicine, National and Kapodistrian University of Athens, 'Aghia Sophia' Children's Hospital, Athe, Greece; **Co-Author:**Sofia Anesiadou, Laboratory of Developmental Psychophysiology and Stress Research, Unit of Developmental and Behavioral Pediatrics, First Department of Pediatrics, School of Medicine, National and Kapodistrian University of Athens, 'Aghia Sophia' Children's Hospital, Athe, Greece; **Co-Author:**Faye Antoniou, Department of Educational Sciences, National and Kapodistrian University of Athens, Athens, Greece, Greece; **Co-Author:**Phivos Phylactou, Department of Rehabilitation Sciences, Faculty of Health Sciences, Cyprus University of Technology, Greece; **Co-Author:**Nicholas Badcock, School of Psychological Science, The University of Western Australia, Australia, Australia; **Co-Author:**Marietta Papadatou-Pastou, School of Education, National and Kapodistrian University of Athens, Athens, Greece & Biomedical Research Foundation, Academy of Athens, Athens, Greece, Greece

Cerebral lateralization, which refers to the differential activation of the brain hemispheres during a cognitive task, is determined early in life. The majority of neurotypical individuals have established a left-sided lateralization for oral language production by the first school years. Interestingly, in cases of dyslexia, cerebral lateralization for oral language production is more symmetrical or right-sided (atypical). Written language production is another expression of language, but cerebral lateralization for written language is yet to be studied in children, neurotypical or not. This is particularly important for dyslexia, as writing difficulties are present in dyslexia, alongside reading difficulties, and seem more difficult to overcome than reading difficulties. The aim of this ongoing study is to compare cerebral lateralization in children at risk for dyslexia and typically developing children during a picture naming writing task using functional transcranial Doppler ultrasonography. We also include a motor control condition (letter copying) to disentangle the linguistic from the motor component of written language. We are sampling two groups of 20 children, at risk and controls, matched for age and intelligence. We hypothesize that the linguistic component of written language will be less left-lateralized in children at risk for dyslexia compared to controls. We will also explore the correlation of the cerebral lateralization for the linguistic component of written language with writing competence, quality, and orthography. If an atypical cerebral lateralization pattern for written language is shown, even at an at-risk stage, it could be used for early identification and, thus, early intervention.

#### **Compensation in children with (a risk of) reading difficulties: A scoping review**

**Keywords:** At-risk Students, Primary Education, Reading, Resilience

**Presenting Author:**Sanne Appels, University Utrecht, Netherlands; **Co-Author:**Sietske van Viersen, University Utrecht, Netherlands; **Co-Author:**Lisette Hornstra, Utrecht University, Netherlands; **Co-Author:**Sara van Erp, University Utrecht, Netherlands; **Co-Author:**Elise de Bree, Utrecht University, Netherlands

This scoping review aims to systematically review empirical evidence for specific protective, skill-enhancing and promotive factors involved in compensation of literacy difficulties in children (aged 6-16) with (a risk of) reading difficulties (RD). While there has been ample attention for identifying risk factors in the field of RD and dyslexia, much less research has focused on resilient trajectories in atypical literacy acquisition. In this scoping review, we examine which evidence for compensatory factors has been found in studies taking either a variable-centered approach or a person-centered approach. The five phases of the methodological framework of Arksey and O'Malley (2005), extended by Levac et al. (2010), were followed: a) specifying the research question; b) identifying relevant studies; c) selecting studies; d) charting the data; and e) collating, summarizing, and reporting the results. Twenty-nine studies were included in which children with (a risk of) reading difficulties were studied on relevant reading and spelling measures (e.g. word-reading accuracy or fluency, text-reading fluency, reading comprehension, and/or word-level spelling), and in which there was a focus on protective, skill-enhancing and/or promotive factors. This scoping review highlights the lack of empirical evidence on compensatory factors behind resilience in literacy acquisition.

#### **The effects of a numerical relational and motor skills intervention on preschooler's early numeracy**

**Keywords:** At-risk Students, Early Childhood Education, Mathematics/Numeracy, Quantitative Methods

**Presenting Author:**Pinja Jylänki, University of Helsinki, Finland; **Co-Author:**Arja Sääkslahti, University of Jyväskylä, Faculty of Sport and Health Sciences, Finland; **Co-Author:**Pirjo Aunio, University of Helsinki, Finland

The aim of this study was to examine the immediate and long-term effects of Movement with Early Numeracy (MovEN) -intervention on children's early numeracy (EN) skills. The MovEN -intervention combined the learning of numerical relational skills via story reading with FMS practicing. A previous pilot intervention study provided preliminary evidence of the effectiveness of MovEN -intervention on children's EN (Jylänki et al., 2022b). In order to examine if the combined numerical relation skills and FMS practicing is more effective compared to EN and FMS learning separately, the MovEN -intervention was compared to two control groups where children participated in either EN or FMS practicing. Together 50 children (M = 5.07 years, SD = 0.85) from six preschools participated in the intervention or control groups, which included 16 sessions, approximately 45 min per session, two to three times a week led by preschool teachers. Children's EN (i.e., numerical relational and counting skills), mathematical problem-solving skills, and FMS were measured once before and twice after the interventions. The preliminary analyses from immediate post-measurements revealed that children in the MovEN -intervention improved their numerical relational, mathematical problem-solving skills, and FMS significantly. Children in the EN -group improved their total EN skills, as well as mathematical problem-solving skills significantly, whereas children in the FMS -group improved significantly only in their FMS. In the EARLI JURE 2023 conference, results with full data and from delayed post-measurements will be presented.

#### **Effects of an literacy intervention on theory of mind and empathy**

**Keywords:** Emotion and Affect, Quantitative Methods, Reading, Secondary Education

**Presenting Author:**Sarah Pariser, Université Paris 8, France; **Co-Author:**André Tricot, University Paul Valéry, Montpellier, France, France; **Co-Author:**Caroline Viriot-Goedel, Université Paris Est Creteil, France; **Co-Author:**Alexia Lefebvre--Boccadifuoco, Université Paul Valéry Montpellier 3, France

Theory of Mind (ToM) and empathy are components of social cognition. As such, they help to navigate within social interactions. They are both considered primary knowledge as defined by Geary (2008), i.e. emerged early on in evolution, have an adaptive benefit and learnt implicitly. However studies show that they are both connected to reading, which is a secondary knowledge. Correlation has been demonstrated as well as causal relationships between reading and the development of empathy and ToM. Specific literacy interventions have been developed to foster ToM and Empathy.

In the study presented, the aim is to assess if a literacy curriculum in middle school based on thorough discussions about character's emotions, aims, beliefs and knowledge is prone to foster pupils' empathy and ToM. This research question is addressed through an RCT experiment with 8th graders (N=982). 43 classes took part in this randomized controlled study, 16 in the experimental group and 27 in two different control groups. After training, teachers from the experimental group collaboratively created a curriculum laying emphasis on ToM and empathy for the studying of selected literary fictions and implemented it in their classes during three months. Empathy and ToM were assessed in pre-test and post-test with respectively the Basic Empathy Scale and the Strange Stories Tests. Students from the experimental group performed significantly better than students from both control groups in ToM, whereas results on empathy are not significant.

#### **Session D 8**

21 August 2023 11:00 - 12:30

UOM\_R02

Poster Presentation

Assessment and Evaluation, Learning and Instructional Technology, Teaching and Teacher Education

#### **Teachers' Digital Literacy**

**Keywords:** Anxiety and Stress, Assessment Methods, Communities of Learners and/or Practice, Critical Thinking, Digital Literacy and Learning, Educational Technologies, Example-based Learning, Higher Education, Inquiry Learning, Instructional Design, Motivation, Multimedia Learning, Pre-service Teachers, Qualitative Methods, Secondary Education, Self-efficacy, Teaching/Instructional Strategies, Video-based Learning

**Interest group:** SIG 01 - Assessment and Evaluation, SIG 07 - Technology-Enhanced Learning And Instruction, SIG 11 - Teaching and Teacher Education

**Chairperson:** Athena Daniilidou, Greece

### **How can we teach about simulations? - a design-based research study**

**Keywords:** Critical Thinking, Digital Literacy and Learning, Inquiry Learning, Teaching/Instructional Strategies

**Presenting Author:** Sonja Bleyemehl, Pädagogische Hochschule Ludwigsburg, Germany; **Co-Author:** Christine Bescherer, Pädagogische Hochschule Ludwigsburg, Germany

Since computer simulations are part of our everyday life, responsible citizens need to be able to reflect simulation results critically. To be capable of asking questions concerning assumptions made, used data, pursued purpose, etc., an epistemological understanding of simulation is needed. In German schools, simulations are often used as tools, but teachers rarely discuss simulations themselves. This study addresses teaching about simulations, their importance for science and chances as well as risks involved. A sequence of five math lessons for a 7<sup>th</sup> grade in lower secondary schools on the topics model, modelling and simulation is under development. One challenge is to choose tasks, which evolve a basis for understanding simulations. Following a design-based research method, tasks are tested, revised and complemented multiple times. The final aim is to develop material for teachers, to support them in teaching about simulations. A first pilot study was conducted.

### **Teaching and Learning in the 21st century – Classrooms in 2022 with a focal point on digital tools**

**Keywords:** Communities of Learners and/or Practice, Multimedia Learning, Qualitative Methods, Teaching/Instructional Strategies

**Presenting Author:** Johan Bäcklund, University of Jönköping, School of Education and Communication, Sweden

This pilot study's aim is to understand how teaching and learning, in the nation-state of Sweden, is organized and carried out in 2022, with focus on the use of digital technologies in the classroom. The pilot has been conducted through an ethnographical and phenomenological approach. Participant observation, along with natural conversations and individual interviews constitutes the data in this study. Four teachers and seven different classes (175 students) have been included in this study and a total of 20 hours have been spent in the classroom, observing, and talking to both teachers and students. Six hours of semi-structured interviews have been conducted with the four different teachers divided into eight different interviews. The conclusions state that technology exists in the classroom and is utilized by both teachers and students if the infrastructure is in place. Albeit as to what purpose digital tools are used, is not always well-defined. Moreover, there are obstacles to cope with regarding infrastructure, time, and resources. The organization of teaching and learning does not seem to have changed albeit the tools might have.

### **Technostress, TPACK, and Self-efficacy: A new tool to measure special needs teachers' use of ICTs**

**Keywords:** Anxiety and Stress, Assessment Methods, Educational Technologies, Self-efficacy

**Presenting Author:** Benedetta Ragni, University of Foggia, Italy; **Co-Author:** Francesco Sulla, University of Foggia, Italy; **Co-Author:** Guendalina Peconio, University of Foggia, Italy; **Co-Author:** Martina Rossi, University of Foggia, Italy; **Co-Author:** Alessia Scarinci, University of Bari, Italy

ICTs can benefit student learning processes and performance, particularly in special education: students with learning difficulties use assistive technology to access standard tools, complete educational tasks, and participate equally with their peers in the educational environment. Although ICTs can help students with special needs, teachers' perception of ICTs strongly influences their use in the classroom. Therefore, teachers' perceptions and attitudes toward the use of ICTs need to be studied to understand the practices of integrating ICTs in the classroom. Developing a new tool that measures different dimensions of teachers' ICTs use could be useful in terms of (1) exploring special needs teachers' perceptions of the use of ICTs; (2) evaluating their skills and monitoring them during training programs, also obtaining interventions' efficacy outcomes. Main aim of this study was to validate the Italian version of a new tool developed by Dong and colleagues (2020) with a sample of Italian in-training special education teachers. Results showed a good factorial structure of the validated tool. Specifically, it measures three main dimensions of in-training special needs teachers' use of ICTs: ICTs technostress, TPACK and ICTs self-efficacy. The new tool validated in this study could represent a useful measure for future research studies that want to explore in-training teachers' perspectives and attitudes related to ICTs use. In addition to this, it could represent a validated tool that universities and Teaching and Learning Centers can use to evaluate the efficacy of their training programs on ICTs.

### **Pre-service teachers' perceptions of the impact of digital stories on critical thinking.**

**Keywords:** Critical Thinking, Pre-service Teachers, Teaching/Instructional Strategies, Video-based Learning

**Presenting Author:** Mary Ann Isaacs, Vrije Universiteit Brussel (VUB), Belgium; **Co-Author:** Jo Tondeur, Vrije Universiteit Brussel, Belgium; **Co-Author:** Joost Vaesen, Vrije Universiteit Brussel (VUB), Belgium

Digital storytelling is a strategy that has shown to be capable of developing a wide range of skills (e.g., Niemi, 2016). This research's main goal was to investigate pre-service teachers' perceptions of the relationship between digital storytelling and the development of critical thinking. For this purpose, a semester-long digital storytelling project was implemented in five subjects of a teaching training program at a Belgian university. At the end of the semester, eleven students from the course participated in semi-structured interviews. An inductive approach was utilised to code and analyse these interviews. The results suggest that pre-service teachers are able to perceive the relationship between digital storytelling and critical thinking are related to the possibility of deep reflection, using different sources of information, representing thoughts and thinking, empowering them on the knowledge they create and the possibility of thinking about the content differently. These results provide teacher trainers with tools to address the development of critical thinking in pre-service teachers based on the student's perspective of how they view the process of their instruction, using a strategy that sheds light on how to approach it in the classroom.

### **Using video modeling examples to foster pre-service teachers' ability to critically judge evidence**

**Keywords:** Example-based Learning, Higher Education, Instructional Design, Pre-service Teachers

**Presenting Author:** Lea Nemeth, University of Kassel, Institute of Educational Science, Germany; **Presenting Author:** Luisa Nägel, University of Kassel, Institute of Educational Science, Germany; **Co-Author:** Frank Lipowsky, University of Kassel, Germany

Evidence-based practice is a key factor in improving teaching practice. Using evidence appropriately requires favourable motivational and attitudinal conditions, and the ability to understand and critically appraise scientific studies. However, pre-service teachers hardly have these competencies. Video modeling examples (VME) illustrating an expert's cognitive processes are promising to promote complex cognitive skills, such as the critical appraisal of scientific evidence. Therefore, the planned study investigates if VME-problem pairs (EP) can better foster pre-service teachers' self-efficacy in applying research evidence and their ability to critically appraise scientific research compared to pure problem-solving (PP). Approximately 150 pre-service teachers' will be randomly assigned to an EP- or PP- condition. Both conditions will be implemented in an online-learning environment. Students of both conditions will first complete a course on heuristics how to judge evidence. In three sessions, students in the EP-condition will first watch a VME, before they judge another study using the taught heuristics. Students in the PP-condition will judge all studies by themselves using the taught heuristics without any VME. Students' self-efficacy and ability to critically appraise scientific research will be measured before the intervention, at an immediate and delayed posttest. We expect the EP-condition to outperform PP-condition in both dependent variables.

### **The (D)FIT-Choice Scale: Measuring Digital Factors Influencing Teaching as a Career Choice**

**Keywords:** Educational Technologies, Higher Education, Motivation, Pre-service Teachers

**Presenting Author:** Judit Martínez Moreno, University of Education Zurich / University of Zurich, Switzerland; **Co-Author:** Dominik Petko, University of Zurich, Switzerland

The FIT-Choice (Factors Influencing Teacher Choice) scale is one of the most used tools for assessing the reasons that teacher students have for pursuing a career in teaching. However, while the importance of using digital technologies in the classroom is increasing, whether teacher-students are motivated to become teachers to digitally transform education has not been investigated enough. Therefore, this study presents and validates an extension of the FIT-Choice scale including digital-related items, named (D)FIT-Choice scale (Digital Factors Influencing Teacher Choice). Concretely, three new subscales have been developed: (1) Prior digital technology usage in education, in Socialisation Influences, (2) Perceived digital teaching competence, in Self-perceptions, and (3) Digital transformation, in Social Utility Value. The entire extended questionnaire, consisting of 22 subscales with 3 items each, was tested with a sample of more

than 230 beginning primary, lower and upper secondary teacher students. Reliability analyses were conducted to test the reliability of all subscales, and confirmatory factor analyses were used to evaluate the fit of the model. The obtained results show that the (D)FIT-Choice scale can be considered a reliable and valid scale, suggesting that it can be used to evaluate whether teacher students have digital-related reasons for becoming a teacher.

#### **Teachers' classroom digital technology integration practices**

**Keywords:** Educational Technologies, Instructional Design, Secondary Education, Teaching/Instructional Strategies

**Presenting Author:**Doris Kristina Raave, University of Tartu, Estonia; **Co-Author:**Margus Pedaste, University of Tartu, Estonia; **Co-Author:**Katrin Saks, University of Tartu, Estonia; **Co-Author:**Eric Roldan Roa, Center for Scalable Data Analytics and Artificial Intelligence, Germany

In order to facilitate technology-enhanced learning, classroom digital technology integration (CDTI) is becoming more and more popular. However, in the Estonian context, there is a lack of understanding of the CDTI's practices that is still required to assess the impact of purposeful CDTI and provide research-based advocacy for CDTI. Our study aims to advance the field by identifying basic education teachers' CDTI practices while taking into account the uses of digital technology. To that end, we conducted in-class observations of basic education teachers' lessons to note the use of digital technology. Using the SAMR model, we examined the observed uses. Additionally, we conducted interviews with the teachers to better understand their goals for the CDTI and organized the explanations provided by categories of technology-enhanced learning. To determine the categories of practices that we later described and compared, we carried out cluster analyses. We identified four categories of teacher practices: introducing, facilitating, motivating, and deepening, which varied in their goals and approaches to integrating digital technology into learning activities. These findings pave the way for examining how various instructional strategies affect student learning outcomes. It is however still a work in progress to identify what is behind these profiles, information that would serve to predict CDTI practices.

#### **Session D 9**

21 August 2023 11:00 - 12:30

UOM\_R01

Poster Presentation

Developmental Aspects of Instruction, Motivational, Social and Affective Processes

#### **Motivation and Emotion**

**Keywords:** Achievement, Anxiety and Stress, Assessment Methods, Attitudes and Beliefs, Cognitive Skills and Processes, Doctoral Education, Emotion and Affect, Foreign and Second Language Acquisition, Goal Orientations, Higher Education, Instructional Design, Interest, Learning and Developmental Difficulties, Mathematics/Numeracy, Mindsets, Mixed-method Research, Motivation, Multicultural Education, Personality, Quantitative Methods, Secondary Education, Self-efficacy, Vocational Education and Apprenticeship Training

**Interest group:** SIG 08 - Motivation and Emotion

**Chairperson:** Azusa Nakata, University of Oulu, Finland

#### **Antecedents and Effects of Boredom during Classroom Instruction at Vocational Schools**

**Keywords:** Emotion and Affect, Instructional Design, Mixed-method Research, Vocational Education and Apprenticeship Training

**Presenting Author:**Katrin Rehrl, Paris - Lodron University Salzburg, Austria

Boredom in classroom is a phenomenon that should not be underestimated in vocational schools and is influenced by factors of classroom design (Kögler & Wuttke, 2012). Previous studies on the experience of boredom have focused on secondary school students, while the empirical evidence on vocational school students is comparatively limited. This is where the present study comes in: Based on the control-value theory (Pekrun, 2006) and the basic dimensions of teaching quality (Praetorius et al., 2018), we investigate which characteristics of teaching quality can explain vocational students' boredom as well as its change in the subject. For this purpose, a longitudinal mixed-methods study in an explanatory sequential design (QUAN → qual) is conducted. Pre- and posttesting (online-questionnaire) will take place in a vocational school block (Ø 9.33 weeks). Participants are 215 (longitudinal section [t1: 522; t2: 284]) learning manual and technical trades. An interview (online) study with 15 students forms the qualitative part. Based on the preliminary theoretical considerations, it is expected that the experience of boredom changes over the course of a school block and that this change can be explained by the perceived instructional design. Implications for emotion-favorable instructional design can be derived from the longitudinal SEM models and the interviews.

#### **Development and Validation of a Motivational Questionnaire Based on Mindset Theory**

**Keywords:** Assessment Methods, Attitudes and Beliefs, Mindsets, Motivation

**Presenting Author:**Jérémie Blanchette Sarrasin, Université du Québec à Montréal (UQAM), Canada; **Co-Author:**Steve Masson, Université du Québec à Montréal (UQAM), Canada; **Co-Author:**Martin Riopel, Université du Québec à Montréal (UQAM), Canada

*Dweck's theory of mindsets (Dweck, 2000, 2006) suggests that endorsing a growth mindset in students plays a crucial role in both motivation and academic achievement. A growth mindset consists of believing that intelligence is malleable, while a fixed mindset consists of believing that people have a certain amount of intelligence that cannot be improved. However, studies aiming at verifying this theory have yielded different and inconsistent results. To better understand the conflicting evidence, we have highlighted the limitations of previous questionnaires aiming at assessing mindsets in the literature. From these limitations, we created a new questionnaire based on mindset theory, in order to provide a more accurate and detailed assessment of the different constructs generally involved in the theory. 49 students in 5th and 6th grades near Montreal (Quebec, Canada) were asked to rate their level of agreement with each of the 34 initial statements using a six-point Likert scale. Results allowed to select the most relevant statements for each construct, and all final constructs presented either high or excellent internal consistency. This new questionnaire may thus help to overcome and better understand the inconsistencies previously found in the literature regarding mindset assessment, contributing both to scientific knowledge in the motivation domain and to a more accurate prediction of the student's motivation to engage in a task.*

#### **Mathematics exam results and students' self-beliefs**

**Keywords:** Anxiety and Stress, Mathematics/Numeracy, Secondary Education, Self-efficacy

**Presenting Author:**Getriin Aaviste, University of Tartu, Estonia; **Co-Author:**Karin Täht, University of Tartu, Estonia

The last few years have been challenging in education. To help students prepare for their national mathematics exam, the Ministry of Education and Research asked the University of Tartu to create a course to prepare students for the exam. During the course, students were asked about their emotions: test anxiety and self-efficacy, also their predictions for the exam results. We analysed those results and added their actual exam results to find whether there were any correlations between those factors. We found that higher self-efficacy predicted better exam results, which is not surprising based on previous research (Villavicencio & Bernardo, 2016). We also confirmed that lower self-efficacy was correlated with higher test anxiety. After analysing students' predicted and actual exam results, we found that students who predicted higher results also got higher results. Continuing the research about math-related learning and self-generated beliefs is essential because learning mathematics can affect students' life tremendously.

#### **Predicting Academic Effort and Academic Achievement? Testing the Transferability of the CONIC Theory**

**Keywords:** Interest, Motivation, Personality, Quantitative Methods

**Presenting Author:**Laura Fink, University of Passau, Germany; **Co-Author:**Detlef Urhahne, University of Passau, Germany

Background. Conscientiousness and individual interest are predictors of academic effort and academic achievement. The Conscientiousness × Interest Compensation (CONIC, Trautwein et al., 2019) model assumes that both traits individually and compensatory predict academic effort. However, as this theory has not yet been tested in any laboratory studies it seems reasonable to test its transferability to other contexts. Aims. This study (a) examines whether the CONIC model holds true for university students in a laboratory setting, (b) investigates whether the predictions of this model can be applied to two different learning tasks, and (c) whether the CONIC model can be extended by including academic achievement as an additional outcome. Sample. Participants were 152 students (69.7% female, age:  $M = 22.24$ ,  $SD = 2.47$ ) from a German university. Methods. Hypothesized relationships between variables were tested using

structural equation modeling. Results. The results provide partial evidence for the applicability of the CONIC model in a laboratory setting and across different learning tasks. Interest and conscientiousness were predictive of academic effort but a compensatory effect was not found. Interest was always predictive and conscientiousness only partially predictive. In addition, interest was partially predictive and effort was consistently predictive of academic achievement. Conclusions. CONIC theory could be applied to a laboratory learning environment. The extension of the model also proved useful making further work on this model promising.

#### **Optimism Going Down The Hill – Changes In Optimism For The Future Across Lower Secondary Education**

**Keywords:** Attitudes and Beliefs, Multicultural Education, Quantitative Methods, Secondary Education

**Presenting Author:** Jana Šimon, Institute for Social Research in Zagreb, Croatia

The present study examined pupils' optimism for their own future, the future of Croatia and the world and its' changes throughout lower secondary education in a sample of 632 elementary school pupils in Zagreb, Croatia. Pupils' optimism for their future, the future of Croatia and the world was measured by three items at five time points (end of the 4<sup>th</sup>, 5<sup>th</sup>, 6<sup>th</sup>, 7<sup>th</sup> and 8<sup>th</sup> grades). The data for each item were analysed using the linear latent curve growth modelling (LGM) for optimism for the future of oneself and piecewise LGM for the future of Croatia and the world. Results suggest a moderate decrease in optimism for pupils' own future and a significant drop in optimism for Croatia's and the world's future across lower secondary education. The rate of change in optimism was dependent on the initial level of optimism for pupils' own future at all time points and throughout 6<sup>th</sup> to 8<sup>th</sup> grade for optimism for Croatia and the world. Growth trajectories for boys and girls suggest distinct developmental trends for the decrease in optimism for Croatia and the world. The expected grade point average as a time-varying covariate had an effect on optimism for pupils' own future at all time points, but only in 4<sup>th</sup> and 5<sup>th</sup> grade for optimism for Croatia and the world. Results of the study indicate a need for the development and refinement of intercultural curriculum as a way of promoting pupils' intercultural competencies and knowledge, optimism and resilience in the ever-changing world.

#### **Experiences of foreign language speaking anxiety under manipulations of attentional focus**

**Keywords:** Anxiety and Stress, Cognitive Skills and Processes, Foreign and Second Language Acquisition, Mixed-method Research

**Presenting Author:** Rebecca Paterson, Kyoto University, Japan; **Co-Author:** Emmanuel Manalo, Kyoto University, Japan

All over the world foreign language (FL) learners experience some degree of anxiety when learning or using a FL, and this is particularly salient in speaking. Why such feelings arise and develop is documented well in foreign language anxiety (FLA) literature as well as the consequence of this anxiety. However, why exactly this leads to diminished speaking performance marred by poor vocabulary recall and linguistic repairs is still under investigation. To understand more about how monitoring processes – cognitive processes during speaking which flag up and direct attention towards perceived threats – we carried out an experiment designed to manipulate where participants' attention is directed during a speaking activity, measuring physiological stress and speech quality, and collecting subjective experience reports through interviews. While still in the data collection stage, we outline preliminary results of one control participant, and three participants in each of the two experimental groups – under which we manipulate the focus of attention inwards or outwards. Results suggest a difference in the rate of syllables and repairs between the groups, with the experimental groups producing more linguistic content. Implications for FL instructors and possible interventions will also be discussed in this poster.

#### **Exploring the Development of Achievement Goals During the PhD**

**Keywords:** Doctoral Education, Goal Orientations, Higher Education, Motivation

**Presenting Author:** Raven Rinas, Augsburg University, Germany; **Co-Author:** Martin Daumiller, University of Augsburg, Germany

Researchers fulfil the important task of generating knowledge for society. However, especially during early career stages, they, too, can be viewed as learners who enter a demanding profession and need to acquire new working skills. The role of achievement goals for cognition and behavior in achievement contexts is well established. Often this motivation is considered as a relatively stable personal characteristic even though it can change over time as a result of adapting to new contexts. Working in academia is characterized by highly formalized transitions that offer the opportunity to observe the course of achievement goals. We tracked the development of mastery and performance goals in 137 PhD students (79 females, age:  $M = 29.4$ ,  $SD = 5.0$  years) at 4 time points over a period of two years. As hypothesized, there was a significant decline in mastery goals ( $t = -2.12$ ,  $p = .03$ ). Performance goals showed no global trends but high variance in interindividual trajectories ( $Var = 1.3-1.8$ ,  $p$

#### **Students' perceived academic demands in schools**

**Keywords:** Achievement, Anxiety and Stress, Learning and Developmental Difficulties, Personality

**Presenting Author:** Saskia Prediger, Leibniz Universität Hannover, Germany; **Co-Author:** Moritz Börner-Ringleb, Leibniz University Hannover, Germany

Academic demands are a key element of teaching and learning in schools and describe specific challenges that students have to master. At the same time, academic demands might be perceived as negative when students come to the impression that they do not have the skills and knowledge to meet these demands. This can result in negative outcomes, such as low performance and emotional reactions like anxiety and stress. Academic demands can thereby be understood as a composite of two elements (1) perceived external demands (e.g. performance pressure, expectations) and (2) internal demands concerning their own academic performance (e.g. performance orientation, ambition). It is hypothesized that previous school achievement, experienced learning difficulties (e.g. SEN) and reference group effects might have an impact on both, external and internal, levels of academic demands. We assume that students who experience high academic demands show higher levels of anxiety and stress, which in turn may result in subsequent emotional difficulties. The aim of the study is to gain insights into individual differences between students' perceptions of academic demands in schools, as well as to examine the relation with relevant predictors/outcomes (school achievement, SEN; reference group effects) using a questionnaire survey in 6<sup>th</sup> and 7<sup>th</sup> graders. The insights gained are particularly important for designing supportive learning environments for students, who struggle in daily learning processes and to prevent a vicious circle of low achievement, high academic demands and negative emotional outcomes.

#### **Session D 10**

21 August 2023 11:00 - 12:30

UOM\_R05

Roundtable

Educational Policy and Systems, Instructional Design, Learning and Special Education, Motivational, Social and Affective Processes

#### **Inclusive Education**

**Keywords:** Digital Literacy and Learning, Early Childhood Education, Gifted and Talented Students, Inclusive Education, Learning and Developmental Disabilities, Migrant / Refugee and Minority students, Parental Involvement in Learning, Reading, Special Education, Teaching Approaches, Teaching/Instructional Strategies, Well-being

**Interest group:** SIG 05 - Learning and Development in Early Childhood, SIG 15 - Special Educational Needs

**Chairperson:** Marcus Kindlinger, University of Duisburg-Essen, Germany

#### **A scoping review of the field of Gifted Students and Physical Activity in School Settings.**

**Keywords:** Gifted and Talented Students, Inclusive Education, Teaching Approaches, Well-being

**Presenting Author:** Felicia Augustsson, University of Karlstad, Sweden

Abstract

Background: The school and its teachers have a responsibility to meet all children's needs for physical activity, including the needs of gifted children. Some gifted children will find it easy to be physically active and participate in the subject of Physical Education at school, while there is research that indicates that gifted students may also encounter challenges in being physically active. As studies on gifted students and physical activity, especially in a school setting is

scarce, it is therefore a need of synthesizing the current evidence base. Objective: The aim of the study is to identify types of available evidence in the field of gifted students and physical activity, foremost in school settings, and thereby identify gaps in the research knowledge. Method: Scoping literature review. Result: The results of the literature review will aim to show gaps in knowledge where future research is needed, and also shed light on existing knowledge about gifted students and physical activity which will be useful especially for teachers in Physical Education who meet these students in the school setting. Keywords: Gifted and Talented Students, Inclusive Education, Teaching Approaches, Well-being,

#### **Exploring sensitive contents in children's literature through multisensory books**

**Keywords:** Digital Literacy and Learning, Inclusive Education, Parental Involvement in Learning, Reading

**Presenting Author:** Radel James Gacumo, University of Stavanger, Norway

Inclusion is a key principle of holistic education for children and youth. The use of gender diverse children's literature is an explicit way of making and establishing a rich, holistic, and contextualised curriculum for all children in early childhood education and care (ECEC). However, there is a lack of research that examines the use of LGBTQ friendly literature in Norwegian ECEC. Digital books diversify and correspond to children's reading choices, but there is a void of research-based resources to support children's understanding of diversity and LGBTQ themes in ECEC and at home. Another gap relates to sensory experiences and especially the sense of smell, which influences the learning process and impacts children's imagination and experiences. This research project combines two cutting edge themes – sensory stimulation and LGBTQ themed stories – to examine how they influence the reading experience and reading engagement of children. A scoping review of existing literature that incorporates gender, LGBTQ themed stories in children's literature, and multisensory reading will be conducted to get an understanding of its accessibility to children and relevance to learning. Furthermore, the project will delve into the perspectives of stakeholders including the school administration, teachers, and parents to get a better understanding of the contexts and complexities concerning the focus of sensitive topics (LGBTQ) in early education and an innovative material (digital books with olfaction mechanism) for reading.

#### **Characteristics of Successful Collaboration in Early Childhood Education and Care in Finland**

**Keywords:** Early Childhood Education, Inclusive Education, Learning and Developmental Disabilities, Special Education

**Presenting Author:** Riina Kovanen, University of Eastern Finland, Finland; **Co-Author:** Aino Äikäs, University of Eastern Finland, Finland; **Co-Author:** Noora Heiskanen, University of Eastern Finland, Finland; **Co-Author:** Eija Kärnä, University of Eastern Finland, Finland

Abstract This study claims to define characteristics of early childhood education and care (ECEC) collaboration in significant support associated with success from the viewpoint of Finnish ECEC professionals. The data is to be collected from ECEC professionals as mind maps presenting the networks they collaborate with and by interviewing the participants. The network maps participants have submitted, and the interviews are analysed with inductive content analysis using qualitative data analysis software Atlas.ti. The data will answer the research questions of *what kind of networks the professionals collaborate with, and which characteristics of early care and education collaboration they associate with success*. The results of the study are expected to describe the networks the professionals work in (who), the activities they engage in when collaborating (what), the frequency of collaborating (when), the context of the collaboration (where), and the characteristics or tools that make the collaboration successful (how). **Keywords:** Early Childhood Education, Inclusive Education, Learning and Developmental Disabilities, Special Education

#### **Teaching methods and individual learning patterns: a refugee entrepreneur perspective.**

**Keywords:** Inclusive Education, Migrant / Refugee and Minority students, Teaching Approaches, Teaching/Instructional Strategies

**Presenting Author:** Colin Kay, Universitat Autònoma de Barcelona, Germany

Since Pittaway and Cope's (2007) systematic literature review (SLR) in entrepreneurship education, subsequent SLRs highlight empirical research in entrepreneurial intention and entrepreneurship education as being vast yet lacking research directly linking student/graduate entrepreneurial outcomes to pedagogical methods (Liñan and Fayolle, 2015; Nabi *et al.*, 2017; Pittaway and Cope, 2007), despite respected scholars and practitioners studying this very topic (e.g. Lackeus, 2015; Moberg, 2014, Neck & Greene, 2011). A recent SLR by Schimperna, Nappo and Marsigalia (2022) states teaching *through* entrepreneurship - project-based and experiential learning - should be offered attention as it is proven to develop entrepreneurial skills - a clear statement linking outcomes to pedagogy - yet there is a dearth of literature available, particularly in non-formal education settings for refugee groups, and none to the researcher's knowledge that considers learners' psychological influences (e.g. individual learner differences) in combination with pedagogical methods. This study seeks, therefore, to explore links between psychological influences (e.g. individual learner differences) and pedagogical methods with entrepreneurial outcomes in entrepreneurship education programmes for refugee groups. It will do so by reviewing psychological and pedagogical research to develop an empirical study to map psychological patterns, pedagogical methods, and entrepreneurial intention.

#### **Session E 1**

21 August 2023 13:30 - 15:00

UOM\_A07

Single Paper

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

#### **Best of JURE - Papers**

**Keywords:** Classroom Assessment, Foreign and Second Language Acquisition, Goal Orientations, Higher Education, Pre-service Teachers, Qualitative Methods, Self-efficacy, Teacher Professional Development, Teaching Approaches, Teaching/Instructional Strategies, Writing/Literacy

**Interest group:** SIG 01 - Assessment and Evaluation, SIG 04 - Higher Education, SIG 08 - Motivation and Emotion

**Chairperson:** Evropi Efthymiadou, Aristotle University of Thessaloniki, Greece

#### **Achievement goal theory and didactic practices: an empirical research**

**Keywords:** Goal Orientations, Self-efficacy, Teaching Approaches, Writing/Literacy

**Presenting Author:** Georgia Stavropoulou, Aristotle University of Thessaloniki, Greece; **Co-Author:** Dimitrios Stamovalis, Aristotle University of Thessaloniki, Greece; **Co-Author:** Eleftheria Gonida, Aristotle University of Thessaloniki, Greece

The stimuli received by students in the educational environment have a strong influence on attitude, behavior and performance. One of these is the teaching practices followed by their teachers. This study aims to investigate the interaction among achievement goal orientations, perceived teachers' goals and perceived didactic practices via a person-centered approach. The participants were junior high-school students (N=1342). They responded to self-report questionnaires which measured students' achievement goals orientation (mastery goals, performance-approach goals, performance-avoidance goals), perceived didactic practices (teacher-centered approach and student-centered approach), perceived teacher goals in the academic environment (mastery goals, performance-approach goals and performance-avoidance goals). We also measured their achievement scores in language and generally in school. For the data analysis Latent Class Analysis (LCA) was used, a person-centered approach which is based on the students' achievement goals orientation. The results showed four latent profiles or four clusters which predicted the dependent variables, perceived didactic practices and were predicted by the independent variables perceived teachers' goals. The most adaptive profile was the mastery goal profile associated with student-centered approach.

#### **Bachelor Students' Experiences with the Acquisition of Interdisciplinary Understanding**

**Keywords:** Higher Education, Qualitative Methods, Teaching Approaches, Teaching/Instructional Strategies

**Presenting Author:** Jennifer Schijf, University of Groningen, Netherlands; **Co-Author:** Ellen Jansen, University of Groningen, Netherlands; **Co-Author:** Greetje van der Werf, University of Groningen, Netherlands

A growing number of interdisciplinary Bachelor degree programmes is offered at comprehensive research universities and these aim to ensure that students gain interdisciplinary understanding. Knowledge on how Bachelor's students' acquire interdisciplinary competences is limited. In this qualitative interview study, we explored how students reflect on their interdisciplinary learning process. The current study was conducted in a large Dutch research university. We held

semi-structured interviews with 15 Bachelor's students enrolled in an interdisciplinary (honours) programme. Students were enrolled in 11 different interdisciplinary modules. We found three themes in students' reflections. Theme 1 is 'acquaintance' and refers to becoming acquainted with views of other disciplines. Students are introduced to lecturers and students with other disciplinary backgrounds and become familiar with other disciplines' language, research methods and knowledge creation. The second theme is 'contrasting'. Students describe how they learn to observe similarities and dissimilarities in knowledge constitution and methodology between academic disciplines. The third theme that we noticed is 'strengthening'. Students report that they strengthen their own disciplinary competences with insights from other disciplines. Students do not experience these themes to the same degree. Experiences focus on 'getting acquainted' and 'contrasting'. We are convinced that students' experiences are valuable for the development of interdisciplinary curricula. Research could focus on stages in the acquisition, teacher experiences and course designs that positively affect students' gaining of interdisciplinary understanding.

#### **Pilot Study; Language Assessment Literacy Training Needs for Yemeni English Language Teachers**

**Keywords:** Classroom Assessment, Foreign and Second Language Acquisition, Pre-service Teachers, Teacher Professional Development

**Presenting Author:** Sabah Al-Akbari, University of Szeged, Doctoral School of Education, Hungary

Language assessment plays a vital role in the EFL classroom teaching and learning. Thus, teachers' language assessment literacy (LAL) needs to be developed as teachers are the primary users of assessment. A huge body of literature calls for developmental programs in teachers' LAL worldwide, but there is a lack of interest in developing EFL teachers' LAL in Yemen. Thus, this study aims at investigating the training needs for English language teachers in Yemen. A convergent parallel mixed-method approach was adopted to collect both quantitative and qualitative data concurrently. A self-report questionnaire (LALQ) was developed and used for the data collection. The LALQ was administered to 102 EFL teachers who teach grades 7, 8, and 9. The SPSS was used to analyse the quantitative data and the thematic coding procedure was used to analyse the qualitative data. The results show that teachers need training in language assessment theoretical background, and in assessing both the language four skills (speaking, listening, writing, and reading) and the language micro-linguistic elements (grammar and vocabulary). The study results also suggest that teachers need training in balancing between required local regulations and sound assessment requirement, in using informal assessment to collect data on their students' language development, and in giving grades for all forms of assessments.

#### **Session E 2**

21 August 2023 13:30 - 15:00

UOM\_A04

Single Paper

Cognitive Science

#### **Developmental Processes in Secondary Education**

**Keywords:** Cognitive Development, Cognitive Skills and Processes, Developmental Processes, Digital Literacy and Learning, Interest, Learning Strategies, Mathematics/Numeracy, Problem-based Learning, Quantitative Methods, Secondary Education, Self-efficacy

**Interest group:** SIG 18 - Educational Effectiveness and Improvement

**Chairperson:** Nynke Douma, University of Groningen, Netherlands

#### **The effects of an entrepreneurial project on career choice readiness of secondary school students**

**Keywords:** Developmental Processes, Problem-based Learning, Secondary Education, Self-efficacy

**Presenting Author:** Maxi Eileen Brausch-Böger, Technical University of Munich, Germany; **Co-Author:** Manuel Förster, Technical University of Munich, Germany

**Abstract:** The present study evaluated a four-day student start-up project regarding its effect on young people's career choice readiness. The hypotheses underlying this project state that participation in a school company project increases the career choice readiness as well as the growth mindset and metacognition of the students. Based on scientific findings, it is also assumed that there is a positive correlation between metacognition, growth mindset and career choice readiness. The study quantitatively examined a student company project conducting a pre-post design. Within the program, school classes develop and implement business ideas together with qualified coaches based on a comprehensive didactic approach. Data from the group of participants were collected at two measurement time points, before and after the intervention. Results show that the values for all constructs increased in the post-test after participating in the school start-up intervention. Furthermore, the findings indicate that metacognition and growth mindset can function as predictors of career choice readiness while metacognition additionally favours growth mindset. There is also an increase in the interrelationships from pre- to post-test results. Moreover, the project has a positive effect on students' career choice readiness by promoting metacognition and growth mindset.

#### **Multiplicity matters: The development of interest profiles during dynamic institutional transitions**

**Keywords:** Developmental Processes, Interest, Quantitative Methods, Secondary Education

**Presenting Author:** Jael Draijer, University Utrecht, Netherlands; **Co-Author:** Lariké Bronkhorst, Utrecht University, Netherlands; **Co-Author:** Barbara Flunger, Utrecht University, Netherlands; **Co-Author:** Sanne Akkerman, Utrecht University, Netherlands

A solid body of research has shown how valuable interest is for attention and learning, both within and outside of formal education. Current models of interest development (e.g., the Four Phase model) are very useful for understanding how an interest can deepen or decline over time, and how development can be supported. However, to expand our understanding of interest development there is a need for a longitudinal perspective on *interest profiles*, i.e. the total composition of all interests that an adolescent pursues in parallel. Previous literature has suggested that interest in many domains declines during adolescence, which would mean that adolescents pursue fewer parallel interests as they get older, and their interest profiles decrease. The current study used an experience sampling method (ESM) implemented in a smartphone application to follow 309 adolescents across a three year period, which included a transition across educational institutions or to the workforce. Results from a growth mixture model (GMM) show four different interest profile developments, with some interest profiles being more continuous (though varying in the amount of interests adolescents pursued and the novelty of these interests) and others demonstrating specialization. These findings offer an alternative view on the reported decline of interest in adolescence, and suggest extending models of interest development by conceptualizing an interest as being nested in a broader interest profile.

#### **An instrument to assess sourcing skills in middle school students: preliminary analysis**

**Keywords:** Developmental Processes, Digital Literacy and Learning, Learning Strategies, Secondary Education

**Presenting Author:** Oriana Incognito, University of Florence, Italy; **Co-Author:** Christian Tarchi, University of Florence, Italy

Many studies have found that evaluating the trustworthiness and usefulness of document sources is an important skill in learning multiple texts. The purpose of the present study was to test with a preliminary exploratory factor analysis the construction of a sourcing assessment questionnaire and whether this was a predictive task to assess intertextual integration skills. A total of 165 adolescents attending middle school participated in the research (M-age [SD]= 11.95 [1.05]). Based on Potocki and colleagues' task, participants completed a source knowledge inventory task. Then, to evaluate intertextual integration skills, a sentence verification task was used. Exploratory Factor Analysis was performed to test the dimensionality of the scales; reliability was evaluated in terms of internal consistency and predictive validity was assessed considering intertextual integration as a criterion variable. The Source Knowledge Inventory shows a trifactorial structure that accounted for 50.76% of the total variance: (1) Source identification, (2) Authors competence and (3) Judgment on web site choice. Multiple linear regression results show that the model is statistically significant (R-square= .14; p

#### **Investigating adaptive (rational) number knowledge in upper secondary school students**

**Keywords:** Cognitive Development, Cognitive Skills and Processes, Mathematics/Numeracy, Secondary Education

**Presenting Author:** Irene Pampallis, University of the Witwatersrand, South Africa; **Co-Author:** Koen Veermans, University of Turku, Finland; **Co-Author:** Jake McMullen, University of Turku, Finland

Adaptive expertise is increasingly regarded as an important element of students' mathematical development. One component of adaptive expertise with arithmetic is adaptive number knowledge (ANK), the well-connected understanding of numerical characteristics and relations which can be used to solve novel problems. The present study aims to examine how ANK with whole numbers and ANK with rational numbers are related to each other, and to upper secondary students' individual characteristics. A sample of 447 high school students aged 13-18 completed a pen-and-paper test of ANK. The relationship between ANK with whole and rational numbers was investigated using an exploratory factor analysis. This revealed a single factor which explained 54.65% of the observed variance after extraction, suggesting a single ANK construct that is consistent across both whole and rational numbers. Further research should explore the precise nature of this construct. Between-group comparisons revealed that gender and mathematics module enrolment had significant and independent effects on ANK: males scored higher, as did students enrolled in more advanced modules. However, in contrast to earlier research with younger students, age had no significant effect on ANK. This raises interesting possibilities about the development of ANK: it may level off in high school, or it may be determined by mathematical experience rather than age. The finding of gender differences in ANK represents a novel line of enquiry in ANK research, which should be explored further in future studies.

### Session E 3

21 August 2023 13:30 - 15:00

UOM\_A09

Single Paper

Assessment and Evaluation, Cognitive Science

#### Writing and Literacy

**Keywords:** Achievement, Cognitive Skills and Processes, Comprehension of Text and Graphics, Computer-assisted Learning, Digital Literacy and Learning, Instructional Design, Large-scale Assessment, Metacognition, Primary Education, Self-regulated Learning and Behaviour, Writing/Literacy

**Interest group:** SIG 12 - Writing, SIG 16 - Metacognition and Self-Regulated Learning

**Chairperson:** Lisa Fohlin, Stockholm University, Sweden

#### The reciprocal relationship between writing performance and self-assessment accuracy

**Keywords:** Large-scale Assessment, Metacognition, Self-regulated Learning and Behaviour, Writing/Literacy

**Presenting Author:** Lucas Liebenow, Leibniz Institute for Science and Mathematics Education (IPN), Germany; **Co-Author:** Johanna Fleckenstein, Leibniz Institute for Science and Mathematics Education (IPN), Germany; **Co-Author:** Jennifer Meyer, Leibniz Institute for Science and Mathematics Education (IPN), Germany

Writing is a complex task, which requires a high degree of self-regulation. Effective self-regulated learning depends on accurate assessments of one's own performance. In turn, students with more accurate self-assessment show higher writing performance. Moreover, evidence suggests that performance affects self-assessment accuracy. Accordingly, there are good reasons to assume a reciprocal relationship between performance and self-assessment. Therefore, the current study investigated this assumption in a pre-post design using secondary data while addressing two research questions: 1) Does self-assessment accuracy predict writing performance and 2) does writing performance predict self-assessment accuracy. To examine these hypotheses, secondary data was used, were in total 2,334 secondary school students ( $M = 18.13$  years; 59% female) from Germany participated. Writing performance and self-assessment accuracy were measured at a pre and post time point. In line with our hypotheses, cross-lagged-panel analyses indicated, that self-assessment accuracy significantly affected writing performance and vice versa. Findings and implications are discussed.

#### Relevance of executive functions and handwriting processes on spelling in beginning writers

**Keywords:** Achievement, Cognitive Skills and Processes, Primary Education, Writing/Literacy

**Presenting Author:** Lidia Jana Truxius, PHBern, University of Teacher Education, Switzerland; **Co-Author:** Judith Sägesser, University of Teacher Education Bern, Switzerland; **Co-Author:** Michelle N. Maurer, University of Oslo, Norway; **Co-Author:** Claudia Roebers, University of Bern, Switzerland

Handwriting is a complex task that affords fine motor and orthographic processes. Fine motor processes and orthographic knowledge are strongly intertwined in beginning handwriting and rely on the same cognitive resources. Theoretical writing models (e.g., Berninger & Winn, 2006) emphasize interrelationships of executive functions, working memory, transcription skills, and higher-order text writing. However, it remains unclear if executive functions and handwriting processes at the beginning of writing support the acquisition of spelling. Therefore, we tested  $N = 359$  first graders (49% girls;  $M_{age} = 84$  months,  $SD = 5$ ) in two waves. In the first wave, we measured executive functions (inhibition, working memory, shifting) and handwriting processes (pen lifts). Three months later, we measured spelling achievement. Regression analyses revealed significant effects of working memory and handwriting processes on spelling achievement three months later. These findings highlight the relevance of cognitive and handwriting processes in spelling acquisition.

#### Analysis of Instructional Design of Writing Interventions Conducted with ICTs: an Empirical Review

**Keywords:** Computer-assisted Learning, Digital Literacy and Learning, Instructional Design, Writing/Literacy

**Presenting Author:** María Victoria González Laguna, University of León, Spain; **Co-Author:** Raquel Fidalgo, University of León, Spain; **Co-Author:** Gert Rijlaarsdam, University of Amsterdam, Netherlands

Information and Communication Technologies (ICTs) have changed the nature of instructional writing practices. This has led to the need to incorporate ICTs into traditional practices, requiring knowledge of the content, uses and pedagogical potential of ICTs. Thus, the aim of this study is to explore which of the activities in the teaching of writing included in effective instructional designs can be taken over by ICT. A review was conducted following the PRISMA Statement guidelines. The documentary search was performed through Web of Science and Scopus and, after applying inclusion and exclusion criteria, the final sample consisted of 22 empirical articles. These were analyzed according to two dimensions. For the content dimension, Intermediate Learning Objectives were analyzed, identifying their object of learning and type of knowledge. Regarding the instructional dimension two elements were analyzed: a) Learning Activities, identifying their type and use or non-use of ICTs; and b) Instructional Activities, identifying their typology, ICT used, and scaffolding provided. Findings showed most ICTs were focused on teaching high-level cognitive writing processes, providing declarative and procedural knowledge. Regarding the instructional dimension, all learning activities can be realized through ICTs, which reduce teaching workload by taking over instructional tasks as explaining contents or providing strategic and/or metacognitive scaffolding. In conclusion, this information allows researchers to know in detail the elements that can contribute significantly to the intervention's success. Likewise, at educational level, it provides useful information for applying ICTs in classroom, showing their characteristics and contents that can be covered by them.

#### Multimodal poetry analysis with the application Explain Everything

**Keywords:** Comprehension of Text and Graphics, Digital Literacy and Learning, Primary Education, Writing/Literacy

**Presenting Author:** Cornelia C Egge, NLA University College/ NLA Høgskolen, Norway; **Co-Author:** Øystein Gilje, Faculty of Educational Sciences; University of Oslo, Norway

In one-to-one computing students are equipped with a wide range of applications (Fjørtoft, 2020; Gilje, 2010; Jewitt, 2007), and the app Explain Everything is interesting as it allows students to combine video, text, pictures and audio for presentations in ways that differs from for instance PowerPoint (Zhao, Djonov, van Leeuwen, 2014). In L1, presentations are mostly performed in the classroom, in situ, as a dissemination and rhetoric aspects are often included in the assessment criteria. However, remediating a presentation from classroom to an application on a tablet, create new ways of demonstrating knowledge and competence. The purpose of this case study is to explore the affordances in Explain Everything when lower secondary students (age 13-15) compose a multimodal, digital text in response to an assignment of oral skills in L1 (Norwegian language education). The student in this case presents a poetry analysis composed with the application Explain Everything and submits the product as a video presentation drawing on multiple semiotic resources available in the application. The text was assessed as an oral presentation. By asking the research questions *How do the students explore and use affordances in the*

application Explain Everything to compose a multimodal presentation? And how do they demonstrate their competence when performing a poetry analysis as an oral, recorded presentation?

#### Session E 4

21 August 2023 13:30 - 15:00

UOM\_A10

Single Paper

Learning and Social Interaction, Motivational, Social and Affective Processes

##### **Social and Emotional Aspects of Learning**

**Keywords:** Cooperative/Collaborative Learning, Emotion and Affect, Eye Tracking, Learning Approaches, Peer Interaction, Qualitative Methods, Researcher Education, Self-regulated Learning and Behaviour, Social Aspects of Learning and Teaching, Well-being

**Interest group:** SIG 08 - Motivation and Emotion, SIG 17 - Methods in Learning Research, SIG 27 - Online Measures of Learning Processes

**Chairperson:** Mirna Sumatic, University of Oxford, United Kingdom

##### **How may learning feel? A way of integrating emotion and affection in the learning process.**

**Keywords:** Emotion and Affect, Learning Approaches, Social Aspects of Learning and Teaching, Well-being

**Presenting Author:** Felipe Sanchez, Lancaster University, United Kingdom; **Co-Author:** Christian SEBASTIÁN, Pontificia Universidad Católica de Chile, Chile

This article proposes that every learning process is an affective experience, and as such, if the learner is not somewhat affected by it, it is possible to argue that learning is not taking place. Affect plays a central role in the unfolding experience of change, conflict and contradiction, and so, it should be accounted for in the dynamics by which the learning process is understood. A general theory of learning should be able to account for and have a specific place for affection in the learning process. Any theory that understands human learning as the construction/transformation of knowledge would agree with the statement that affect and emotions are an important part of the human learning process. However, one thing is to affirm that affection is important, and another is to explain *how* they are part of the process. This article's contribution is to propose a hypothesis of how this internal articulation between cognition and affection/emotion could occur, consistently with a processual and dialogic approach to human learning. Altogether, I will argue for one possible articulation between learning taking from the constructivist perspectives of Piaget and Vygotski, as developed in Sebastián, Vergara and Lissi (2021), and the affective and emotional experience of learning.

##### **Systematic Review: Empirical Studies of Socio-Emotional Aspects of Collaborative Learning**

**Keywords:** Cooperative/Collaborative Learning, Emotion and Affect, Peer Interaction, Qualitative Methods

**Presenting Author:** Azusa Nakata, University of Oulu, Finland; **Co-Author:** Hanna Jarvenoja, University of Oulu, Finland

Collaborative learning (CL) is a complex process entailing both cognitive and socio-emotional interactions. While the cognitive sphere of CL has been widely studied, and the significance of the socio-emotional dimension has been broadly recognized, the interest to unpack the socio-emotional aspects of CL per se has become widespread only recently. The field is developing and researchers targeting emotions, affect and socio-emotional interaction as vital factors for successful collaboration are constantly searching, developing, and implementing different theoretical and methodological approaches. This study aimed to capture a state-of-the-art in the research field by reviewing recent empirical research papers. A systematic literature review investigated related studies' a) theoretical underpinnings, b) targeted units of analysis (i.e. individual vs group) and c) implemented measurements and analytical focus. The findings show that most of the selected studies are framed with constructs of regulation of learning, especially group-level emotion regulation in socially challenging situations. Analytical targets were often group-level socio-emotional interactions observed by video recordings. Individual students' perceptions of the collaboration process were also captured using self-reports and interviews to better understand the group-level phenomena. However, not many studies considered a participant's personal traits (e.g., behavioural preferences, cultural factors etc.) when understanding a socially challenging situation. This suggests a necessity for further development in research design. Capturing the multilayered functioning of emotions in interactions and reflecting each one's hidden traits into their present behaviours allows us to better understand the socio-emotional aspects of CL.

##### **Connecting Gaze Activity to Socially Shared Regulation of Learning**

**Keywords:** Cooperative/Collaborative Learning, Eye Tracking, Peer Interaction, Self-regulated Learning and Behaviour

**Presenting Author:** Ridwan Whitehead, University of Oulu, Finland; **Co-Author:** Andy (Khanh Xuan) Nguyen, University of Oulu, Finland; **Co-Author:** Sanna Järvelä, University of Oulu, Finland

This paper presents a novel approach to revealing processes related to socially shared regulation of learning in collaborative learning context by exploring different types of gaze interactions. Previously, multimodal data has been utilized to uncover the complex and metacognitive interactions within collaborating groups, however, in the context of shared regulation, the potential of gaze has never been explored. This study analyzes nine triads consisting of Finnish high school students collaborating on an authentic task employing a mix of statistical methods and qualitative analysis. Chi-square and Cramer's V will be computed in addition to process mining and content analysis to reveal possible correlations and relations between gaze activity and SSRL. Descriptive results reveal high frequency count of partner and object-oriented gaze, while gaze duration sum shows laptop-oriented gaze duration to be more than ten times longer than partner-oriented gaze. The findings of this study will contribute by revealing how gaze can be utilized to further detail SSRL processes occurring in collaborating groups.

##### **Understanding learning, research and art as «an» experience.**

**Keywords:** Emotion and Affect, Qualitative Methods, Researcher Education, Social Aspects of Learning and Teaching

**Presenting Author:** Felipe Sanchez, Lancaster University, United Kingdom

"Art, then, is an increase of life, a sort of competition of surprises that stimulates our consciousness and keeps it from becoming somnolent" (Bachelard, 1994, p. 17). This quote leads to wondering, just as 'boring' lectures are Morpheus' playground for tired students, are we decreasing life from the study of learning as well? Research not only needs to aid to comprehend wicked issues like learning experiences, but also needs to bring back life into it, increase it. Learning experiences have a richness that dwells from a complex understanding, like considering the emotional and affective aspects as well as the cognitive, reflective, amongst others, or by understanding learning experiences as dialogic mediated productions. This complexity and dynamism that is also usually found on the messiness of educational research arguably gets diluted into clarity by research methods, thus prompting alternative ways of conducting research that not only acknowledges it, but that it actively fosters said characteristics. One possible solution argued in this paper is conducting research through art-based research. Art-based research is not about taking art as just another technique within the research procedure but means to convey a certain epistemology that understands knowledge production as relational, dialogical, and processual. Thus, this reflective theoretical paper argues that the research endeavour can twisted rhetorically thought understanding both learning, research and art as «an» experience, and thus granting a new place of scientific, valid, and systematic knowledge to the artfully produced data, while properly constructed and open-ended in its meaning and interpretation.

#### Session E 5

21 August 2023 13:30 - 15:00

UOM\_A05

Single Paper

Educational Policy and Systems, Higher Education

##### **Educational Policy and Curriculum Development**

**Keywords:** At-risk Students, Attitudes and Beliefs, Cultural Diversity in School, Curriculum Development, Developmental Processes, Educational Policy, Gender Issues, Higher Education, Primary Education, Qualitative Methods, Quantitative Methods, Secondary Education, Teacher Efficacy

**Interest group:** SIG 04 - Higher Education, SIG 11 - Teaching and Teacher Education, SIG 17 - Methods in Learning Research, SIG 18 - Educational Effectiveness and Improvement

**Chairperson:** Theodoros Zevgitis, University of Ioannina, Greece

### **Schools' Policies and their Relationship with Teachers' Grade Retention Beliefs and Practices**

**Keywords:** At-risk Students, Attitudes and Beliefs, Educational Policy, Primary Education

**Presenting Author:** Natalie de Nóbrega dos Santos, ISPA-Instituto Universitário, Portugal; **Co-Author:** Vera Monteiro, ISPA- Instituto Universitário, Portugal

Some authors suggest that the high rates of grade retention observed in several countries are due to a generalised belief in the benefits of this practice. Still, grade retention is a decision made within a set of guiding documents defined at the national and school levels. The present study sought to understand the moderating effect that schools' educational policies on grade retention have on the relationship between teachers' grade retention beliefs and practices. An analysis of the guiding documents of 68 schools in the Region of Madeira, Portugal, made it possible to identify the criteria and requirements required by the school for making a retention decision. An online questionnaire was also used that collected the beliefs and retention practices of 300 teachers. A latent class analysis identified five groups of teachers organised on a continuum from greater denial of the benefits of retention (Profile 1) to greater confidence in its benefits (Profile 5). There was a significant association between teachers' beliefs and practices only in schools without criteria or requirements defined for the retention decision. The results suggest that teachers need relevant information to guide their decision-making and provide greater coherence in the actions of stakeholders.

### **Double First-Class Initiative : An application of performance-based funding at a Chinese university**

**Keywords:** Educational Policy, Higher Education, Qualitative Methods, Teacher Efficacy

**Presenting Author:** lat Fei Lam, The Chinese University of Hong Kong (CUHK), Hong Kong; **Co-Author:** Manhong Lai, The Chinese University of Hong Kong, Hong Kong

#### **Abstract**

With the ascendancy of New Public Management, performance-based funding systems (PBFS) have become widespread in many countries. The intended and unintended consequences of PBFS have been widely discussed in previous studies. This study uses qualitative methods to investigate the implementation of internal PBFS and its impact on a university in China. We conducted in-depth interviews at a sample university which is a Double First-Class university with several First-Class disciplines. Twelve academics in three different situation disciplines were interviewed. First, the structure of the internal PBFS is almost the same as the directive of the Double First-Class Initiative, and the motivation for implementing the internal PBFS is accountability and efficiency instead of excellence. Second, academics must change their publishing strategy and sacrifice their time on teaching to achieve better performance in the evaluation. Third, most academics feel burnout and loneliness due to the enormous pressure of publishing.

### **School Culture and Reform: An Analysis of Attributions and Satisfaction with a new Curriculum**

**Keywords:** Cultural Diversity in School, Curriculum Development, Developmental Processes, Quantitative Methods

**Presenting Author:** Marina Grgic, Pädagogische Hochschule Bern, Switzerland; **Co-Author:** Michelle Jutzi, University of Teacher Education Bern, Switzerland

According to Hascher et al. (2021), school culture is becoming the focus of various interests as a starting and orientation point for school development. However, research on culture in the school context is still a rarity in German-speaking countries (Junker et al., 2016; Demski, 2017). Within the present study, the OCAL-SK (Müthing, 2013), a quantitative measurement instrument developed on the basis of Quinn and Rohrbaugh's (1983) Competing Value Framework, is used to survey the school culture of 30 schools with regard to the assessment of 300 teachers. In addition, teachers were surveyed about implementation satisfaction in the context of the Media and ICT (M&I) module curriculum implementation. Currently, the survey is underway and is expected to be completed by the end of January 2023. The significance of the results will then be discussed with regard to the further development of school culture for the optimal implementation of school reforms.

### **Investigating the factors that influence secondary school enrolment using multilevel modelling**

**Keywords:** Educational Policy, Gender Issues, Quantitative Methods, Secondary Education

**Presenting Author:** Bridget Azubuike, University of Bristol, United Kingdom

This study investigates the factors that influence school enrolment for secondary school aged children in Nigeria. Using quantitative secondary data analysis techniques such as Multilevel modelling, this study analyses nationally representative data to examine the individual, household and geographical level factors that influence school enrolment. The results reveal that sociodemographic school enrolment gaps exist amongst secondary school aged children in Nigeria. In particular, household wealth and parental education have a strong influence on the probability of school enrolment. Furthermore, gender gaps in schooling enrolment that were previously seen in 2010 data have reduced drastically. The results also reveal a massive North-South divide in school enrolment in Nigeria. Using random slope models, the study finds that the influence of household wealth on school enrolment does vary across states in Nigeria. States in the South of Nigeria with higher-than-average school enrolment had smaller wealth gradients i.e household wealth did not strongly influence school enrolment. While the states in the Northeast and Northwest regions of the country had strong wealth gradients. This study also highlights the importance of accounting for the hierarchical nature of the data used, a key feature of Multilevel models. A key contribution of this study is the use of multilevel modelling to understand spatial heterogeneity in school enrolment in Nigeria, which reveals the strong variations in school enrolment across states and communities and regions in Nigeria.

## **Session E 6**

21 August 2023 13:30 - 15:00

UOM\_A11

Single Paper

Developmental Aspects of Instruction, Educational Policy and Systems, Teaching and Teacher Education

### **School Leadership and Educational Policy**

**Keywords:** Computer-assisted Learning, Cooperative/Collaborative Learning, Curriculum Development, Educational Policy, Informal Learning, Mentoring and Coaching, Qualitative Methods, School Leadership, Secondary Education, Teacher Professional Development

**Interest group:** SIG 11 - Teaching and Teacher Education, SIG 14 - Learning and Professional Development, SIG 28 - Play, Learning and Development

**Chairperson:** Mette Mari Wold Johnsen, Norwegian University of Science and Technology (NTNU), Norway

### **Pedagogical leadership of pedagogical development**

**Keywords:** Cooperative/Collaborative Learning, Curriculum Development, Qualitative Methods, School Leadership

**Presenting Author:** Alex Mäkiharju, Åbo Akademi University, Faculty of Education, Finland

In Finland, a curriculum reform for the comprehensive school was enacted in 2014 and implemented 2016, emphasizing a holistic operational culture especially visible in the phenomenon-based learning. The idea is to demonstrate how different subjects/fields of knowledge highlight the same societal phenomenon. Such a curricular ambition forces teachers to cooperate when planning and carrying out their teaching. Principals may also need to mediate and create dialogical spaces for different subject teachers, who are used to working alone with their classes. This research aims to examine how subject teachers and principals in lower secondary schools (grades 7-9) conceive the a) ambition, and b) implementation of multidisciplinary learning and c) the shift from a teaching environment characterized as individual and subject-centered to a culture emphasizing collaboration and a holistic pedagogical continuum. Non-Affirmative Theory of Education (NAT) and Cultural-Historical Activity Theory (CHAT) form the theoretical framework for the paper. NAT provides a language for the pedagogical dimensions of implementing and teaching phenomenon-based, while CHAT describes the contextual and the structural-analytical aspects of the research phenomenon. The empirical research methodology applies phenomenography and CHAT. Phenomenography is used to find qualitatively different ways a phenomenon is conceived, while CHAT turns the attention to possible tensions and contradictions. Data is collected by thematic in-depth interviews with

the aim of interviewing five principals and ten subject teachers. Preliminary results shows the importance of a systematic perspective on development between and within different levels of education. It also shows contradictions between work agreements and multidisciplinary learning.

#### **Leadership for cooperative professional development in an educational reform**

**Keywords:** Educational Policy, Mentoring and Coaching, School Leadership, Teacher Professional Development

**Presenting Author:**Tiina Lindfors, University of Helsinki, Finland; **Co-Author:**Raisa Ahtiainen, University of Helsinki, Finland; **Co-Author:**Lauri Heikonen, University of Helsinki, Finland; **Co-Author:**Auli Toom, University of Helsinki, Finland

In times of rapid change, ability to lead educational reforms is essential. Teacher professional development (TPD) is one of the key elements for successful reforms and school improvement (Desimone et al., 2002). Another key is leadership on all levels of the educational system (Fullan, 2010); thus, for a change to happen in classrooms, leadership for TPD must take place on national, local and school levels. Researchers widely agree that the most effective forms of TPD activities are peer-based cooperative professional development (CPD) activities (e.g. Borko et al., 2010; Desimone & Garet, 2015; Garet, 2001). Research on leadership for CPD is mainly limited to the school level (e.g. Pedder & Opfer, 2010; Printy, 2008), while in the context of an educational reform we need understanding of leadership on all the levels of an educational system (Fullan, 2015). This study aims to fill the gap in school reform literature by exploring the role of local level leadership in CPD activities aimed at implementing an educational reform. We examine leadership for the Finnish tutor teacher program (2016-2019), a national CPD program aiming to support educational reform. With three data sets, covering 232 municipalities and 2200 schools, we examine local level coordinators' views on a) successful tutor teacher activities, b) the role of leadership on successful tutor teacher activities and c) tutor teacher activities' connections to municipality's strategic and professional development plans. Abductive qualitative content analysis is made to approach these questions.

#### **A literature review of an informal learning environment and connections with education policy goals**

**Keywords:** Curriculum Development, Educational Policy, Informal Learning, Secondary Education

**Presenting Author:**Ashley Bough, University College Dublin, Ireland

The last few years have seen education accelerate exponentially in recognising informal learning environments for developing new digital skills and capacities, which in turn enables teachers and students to engage in the advancing world. The covid pandemic brought challenges and opportunities within education and there is the potential for continuous learning to occur not only through the high stakes formal learning initiatives such as summative examinations, but also through informal learning spaces such as projects, listening, oral and practical examinations that are embedded within curricula. This paper surveys the growing body of literature on the informal learning environment of the transition year programme in the Republic of Ireland, making critical observations surrounding the relevance and priority of informal learning environments within Europe and Ireland's educational goals, and examines the various ways these spaces occur within the transition year programme in Ireland. This study reveals the uncertain trajectory of digital education as a space through the lens of the current informal learning environments available within Post-Primary education. This review will be used to support policy and curriculum planning in other countries across Europe for possible teaching and learning changes that are on the horizon in the future. The article uncovers opportunities and consequences of the specification for the national curricula goals, the impact on teachers and students' capacities and the role that informal learning environments have on teaching and learning.

#### **Pathways for a successful implementation of media and information literacy in elementary schools**

**Keywords:** Computer-assisted Learning, Curriculum Development, Educational Policy, School Leadership

**Presenting Author:**Thomas Wicki, PHBern, University of Teacher Education, Switzerland

This study examines pathways for a successful implementation of media and information literacy (MIL) in Swiss elementary schools. Based on school development theory and governance research, four conditions were carved out analysing interviews from six in-depth case schools: (1) school leaders process design, (2) transfer of training content to the classroom, (3) shared implementation goals and (4) staff participation. To validate those findings, we expand our sample with thirty additional schools by using qualitative-comparative analysis (QCA). This method allows the combination of the qualitatively collected interview data and quantitative data from an online survey to investigate which combinations of conditions lead to a successful implementation. We argue that different pathways lead to a successful implementation and deviant cases help to better understand the complexity of school reforms.

#### **Session E 7**

21 August 2023 13:30 - 15:00

UOM\_R02

Poster Presentation

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

#### **Self-Regulated Learning and Behaviour**

**Keywords:** Achievement, Assessment Methods, Conceptual Change, Example-based Learning, Eye Tracking, Higher Education, Learning Approaches, Learning Strategies, Metacognition, Mindsets, Motivation, Pandemic, Primary Education, Problem Solving, Qualitative Methods, Quantitative Methods, Secondary Education, Self-regulated Learning and Behaviour, Teaching/Instructional Strategies

**Interest group:** SIG 03 - Conceptual Change, SIG 04 - Higher Education, SIG 16 - Metacognition and Self-Regulated Learning

**Chairperson:** Lene Sirevåg, Norway

#### **Why and why not? Reasons and Misconceptions of young Students Self-Regulated Learning Strategy Use**

**Keywords:** Motivation, Primary Education, Qualitative Methods, Self-regulated Learning and Behaviour

**Presenting Author:**Bernadette van Berk, Technical University of Dortmund, Germany; **Co-Author:**Charlotte Dignath, TU Dortmund University, Germany

Self-regulated learning (SRL) describes the ability to plan, set goals, monitor and reflect the own learning process by using various strategies (Zimmerman, 2000). Since self-regulation is considered a strong predictor of future academic success (Robson et al., 2020) there is a growing debate about how to effectively promote this capacity in students. To assess SRL and the effectiveness of SRL trainings mostly quantitative approaches and instruments, as questionnaires, are used (Vandeveldt et al., 2013). The question remains why the use of self-regulation during learning strongly varies between learners and why there is a large number of students that have difficulties to self-regulate. In this study we investigate reasons for and misconceptions about SRL of primary school students with an explorative qualitative approach and aim to provide implications about the quality of SRL strategy use.

#### **Exploring the cue-utilization framework for learning activity choices in self-regulated learning**

**Keywords:** Achievement, Learning Approaches, Learning Strategies, Self-regulated Learning and Behaviour

**Presenting Author:**Klara Schröder, TU Dresden, Germany; **Co-Author:**Susanne Narciss, TU Dresden, Germany; **Co-Author:**Antje Proske, TU Dresden, Germany

This systematic literature review examines the cues suggested by the cue-utilization framework (Koriat, 1997; Ackermann, 2019) in the context of (subsequent) selections of learning activities when given the choice in a self-regulated learning context. More precisely, the aim of the review is to identify studies in which external cues have been explicitly manipulated, and explore (a) if and how students use the cues to select a learning activity, and (b) if and how students' choices were beneficial in terms of promoting learning/knowledge acquisition. In order to answer these research questions, a systematic literature review is currently conducted using the CADIMA software and a PICOS-table. The initial search resulted in 418 articles. Currently, the final 20 articles are being analysed regarding their external cues. It is planned to identify conditions under which external cues lead to beneficial selections of subsequent learning activities. An overview about the process and the methods of data searching and selection is given. Results of the review will be presented and discussed on the poster.

#### **Training self-regulated learning skills: Exploring conditions and obstacles for successful transfer**

**Keywords:** Example-based Learning, Eye Tracking, Problem Solving, Self-regulated Learning and Behaviour

**Presenting Author:**Jane Piepenbosch, Utrecht University, Netherlands; **Co-Author:**Gesa van den Broek, Utrecht University, Netherlands; **Co-Author:**Vincent

Hoogerheide, Utrecht University, Netherlands; **Co-Author:**Ewa Miedzobrodzka, Utrecht University, Netherlands; **Co-Author:**Tamara Van Gog, Utrecht University, Netherlands

For effective self-regulated learning in problem-solving tasks, students must accurately assess their own performance and select a suitable next learning task. However, most students struggle with self-assessment (SA) and task-selection (TS). Recent research shows that self-assessment and task-selection skills can be trained through video examples (SATS-training), in which those skills are demonstrated, and that this improves self-regulated learning outcomes. However, the limited research available suggests that students struggle to transfer these trained skills to other problem-solving contexts, and it remains unknown which factors facilitate or complicate transfer. Therefore, this study aims to uncover potential conditions and obstacles for successful transfer through an in-depth analysis of students' approaches to assessment and task-selection in new problem contexts. Thirty adolescents receive the SATS-training, complete a recall task of the trained self-assessment and task-selection procedure, and a vignette task, i.e., short descriptions of fictitious performance data on the trained (biology) problems and transfer problems in a new problem context (math) with a different number of problem-solving steps and/or database structure, based on which they have to select a next task. Process-tracing techniques (think-aloud protocols, eye tracking) are collected while students work on the vignettes. Key conditions for successful transfer will be explored by examining how well students can recall the trained procedure, recognize key features of the new context, and adapt the rule to the new problem context. The results will be available before the conference. These findings will inform future research on how to improve the transfer of trained self-regulated learning skills.

#### **Through the lens of Scarcity. How perceived scarcity shapes student mindsets and learning experience**

**Keywords:** Metacognition, Mindsets, Motivation, Self-regulated Learning and Behaviour

**Presenting Author:**Jessica Schulz, Albert-Ludwigs-University Freiburg, Germany; **Co-Author:**Matthias Nückles, University of Freiburg, Germany

Much research has shown that to succeed academically students need to have a stable self-concept (Marsh, 1990) as well as self-efficacy (Schwarzer/Jerusalem, 1995) to regulate their learning processes and successfully formulate and follow their goals. Nevertheless, despite all the available knowledge about and diverse teachings on self-regulated learning, some students still fall behind. Using a behavioral economic notion to explore students learning motivation, this study aims to investigate the perceived scarcity of students in their learning environment, bearing in mind the psychological consequences that scarcity possibly have for motivation, self-regulated learning processes and especially the question whether it correlates with an entity theory of intelligence (Dweck, 2000). This study is considered as a first overview about the psychological effects of perceived scarcity in learning environments and thus serves as preparation for further research on cognitive and behavioral consequences of scarcity in learning settings with a main focus on the following question: Does chronic scarcity lead to a (negative) habituated pattern of behavior? Findings that answer this question in the affirmative would potentially influence factors and solutions to create better chances of equality in education.

#### **Self-opt-in Productive Failure: interaction between effective strategy selection and categorization**

**Keywords:** Assessment Methods, Conceptual Change, Learning Strategies, Self-regulated Learning and Behaviour

**Presenting Author:**Heli Aomets, Tallinn University, Estonia

Conceptual change (CC) and productive failure (PF) have been studied extensively. It is less known whether students' metacognitive knowledge about effective learning in less structured learning situations is related to their CC. The purpose of this paper is to find out what CC differences are between the students who select PF or direct instruction (DI) if presented with these options. Second, this paper aims to find out how selecting PF and more abstract thinking, measured by a categorization task, are related. CC is measured by a knowledge transfer test. An online test was conducted with 1504 8-9th grade students in Estonia. Within the test students were presented with two occasions where they could choose the way they would learn new concepts about a biology and physics integrated task. Preliminary results show that students who selected PF on both occasions got higher scores on the knowledge transfer test than the students who selected DI on both occasions, on average.

#### **Effects of growth mindset interventions on the self-regulated use of retrieval practice**

**Keywords:** Higher Education, Learning Strategies, Mindsets, Self-regulated Learning and Behaviour

**Presenting Author:**Jingshu Xiao, Erasmus University Rotterdam, Netherlands; **Co-Author:**Martine Baars, Erasmus University Rotterdam, Netherlands

**Abstract:** (232/250) Although general growth mindset interventions have been found to improve students' learning outcomes, relatively little research has been focused on effects of specific growth mindset interventions. We investigated whether a specific growth mindset intervention focusing on self-regulated learning (SRL) would have a larger effect on promoting students' use of retrieval practice compared to a general growth mindset intervention focusing on the malleability of the brain. We compared three conditions. A general growth mindset (GGM) condition ( $n = 69$ ), a specific growth mindset (SGM) condition ( $n = 69$ ), and a control condition without mindset intervention ( $n = 69$ ). In each condition participants were also instructed about the benefits of using retrieval practice as a learning strategy. The dependent measures were growth mindset level, use of retrieval practice, belief in retrieval practice, perceived mental effort, and immediate and delayed recall performance. We expected participants in the SGM condition to score higher on growth mindset beliefs, use of retrieval practice, belief of retrieval practice, performance on immediate and delayed recall compared to participants in the GGM condition, who in turn were expected to score higher on these variables than the control condition. In addition, participants in the SGM condition were expected to report lower perceived mental effort compared to participants in the GGM condition, who in turn were expected to score lower than participants in the control condition. Results will be available in Spring 2023.

#### **Young adults' self-regulation of learning and behavior during COVID-19: The role of purpose in life**

**Keywords:** Higher Education, Pandemic, Quantitative Methods, Self-regulated Learning and Behaviour

**Presenting Author:**Christina Koretsidou, Aristotle University of Thessaloniki, Greece; **Co-Author:**Eleftheria Gonida, Aristotle University of Thessaloniki, Greece

Young adults experienced negative effects due to the pandemic, both socio-emotional and academic ones. The present study aimed to investigate the contribution of purpose in life and self-regulation of behavior to self-regulated learning of young adults in the context of the emergent remote education during the COVID-19 pandemic. Moreover, perceived lack of control due to the pandemic and its relation to self-regulated learning was also examined. A sample of 389 young adults studying either at public universities or in public post-secondary vocational schools were asked to fill in their demographic data and a number of self-report scales measuring self-regulation of behavior (e.g., goal-setting), self-regulation of behavior in relation to learning, (e.g., effort regulation), purpose in life (i.e., goal orientation, personal meaning, personal contribution to the world beyond self) and perceived lack of control in relation to COVID-19. Path analysis indicated that all three dimensions of purpose in life predicted self-regulated learning directly and indirectly via decision making, a dimension of self-regulation of behavior. Moreover, perceived lack of control was found as a mediating variable between personal meaning as a dimension of purpose in life and self-regulated learning. Findings are discussed in light of relevant literature and their implications for promoting self-regulated learning in tertiary education especially in times of change and uncertainty.

#### **First results on teacher awareness of student self-regulated learning behaviour in the classroom**

**Keywords:** Eye Tracking, Secondary Education, Self-regulated Learning and Behaviour, Teaching/Instructional Strategies

**Presenting Author:**Kateryna Horlenko, Vytautas Magnus University, Lithuania; **Co-Author:**Lina Kaminskienė, Vytautas Magnus University, Lithuania; **Co-Author:**Erno Lehtinen, University of Turku, Finland

The aim of this pilot study was to investigate teacher awareness of students' self-regulated learning (SRL) behaviour using data from student self-reports, teacher ratings, and mobile eye tracker recoding that revealed teacher gaze distribution between students during one lesson. Two upper-secondary school teachers and their students took part in the study. The results show that teacher and student judgements of student self-regulated behaviour overlap in the area of maladaptive regulatory behaviours and absence of self-management, implying that low-regulatory behaviours are more evident for teachers than student productive regulatory behaviours. The correlations between the teacher gaze data and student self-reported SRL behaviour scores demonstrated dissimilar trends between the two teachers, where one tended to look shorter on self-regulated learners, while the other tended to look longer on them, and shorter on less regulated students. The results imply the need for further investigation of teacher understanding of SRL processes and the ways to assess them.

## Session E 8

21 August 2023 13:30 - 15:00

UOM\_R01

Poster Presentation

Culture, Morality, Religion and Education, Educational Policy and Systems, Learning and Instructional Technology, Learning and Social Interaction, Lifelong Learning, Motivational, Social and Affective Processes, Teaching and Teacher Education

### **Citizenship Education and Sustainable Development**

**Keywords:** Attitudes and Beliefs, Citizenship Education, Communities of Learners and/or Practice, Competencies, Critical Thinking, Cultural Diversity in School, Developmental Processes, Emotion and Affect, Environmental Education, Gender Issues, Higher Education, Informal Learning, Large-scale Assessment, Lifelong Learning, Qualitative Methods, Science Education, Secondary Education, Social Aspects of Learning and Teaching, Social Interaction, Social Media, Sustainable Development, Teaching/Instructional Strategies

**Interest group:** SIG 01 - Assessment and Evaluation, SIG 10 - Social Interaction in Learning and Instruction, SIG 11 - Teaching and Teacher Education

**Chairperson:** Sheeza Mahak, Loughborough University, United Kingdom

### **Global Changes Require Special Skills: What about Cultural Intelligence and Futures Literacy?**

**Keywords:** Competencies, Critical Thinking, Cultural Diversity in School, Developmental Processes

**Presenting Author:** Claudia Ortner, University of Salzburg, Austria

Rapid global changes bring up new challenges in our society. International relationships are common in many daily working and social life settings, so students have to learn how to interact sensitively with people from other cultures. In addition, high dynamics in societies increase the level of uncertainty and indeterminacy about the future which requires future skills or foresight competencies. As education seeks to empower young people to shape their lives and careers, emerging concepts as cultural intelligence and futures literacy should be considered in schools, school development processes, and related educational research. We aimed to identify the levels and interconnectedness of cultural intelligence and futures literacy of secondary school students. Within a school development project, students from an international secondary school were surveyed (among other variables) about their self-assessments in relation to cultural intelligence and futures literacy. We analyse descriptive distribution patterns of these variables. We further compute correlations and structural equation models of cultural intelligence and futures literacy with achievement variables and motivation-based learning strategies. Furthermore, gender and age group differences are analysed. Finally, the need for more attention on these constructs within school development programs is discussed.

### **Supporting Sustainability Competencies in ESD Teacher Education: A Systematic Literature Review**

**Keywords:** Competencies, Environmental Education, Higher Education, Sustainable Development

**Presenting Author:** Liisi Pajula, University of Tartu, Estonia

Education for Sustainable Development (ESD) is widely recognised as a vital tool for creating a more sustainable future, with teachers carrying a lot of responsibility for the change. Within ESD, recognised competency models target the skills, attitudes, and knowledge necessary for sustainability. The aim of this systematic literature review was to analyse how competencies are supported in existing teacher education programmes within ESD to see to what extent existing teacher education programmes within ESD address and develop the competencies included in the recognised models. The conceptualisation of ESD in the pertinent studies was also analysed. To achieve the aims, a search was carried out and 1,241 articles were retrieved from EBSCO, Scopus, and Web of Science. Of those, 615 were screened based on their titles and abstracts and according either included or excluded according to specific criteria. Preliminary findings suggest a lacking conceptualisation for ESD in the analysed teacher education programmes and difficulty in distinguishing between the interrelated sustainability competencies.

### **Gender equality in international comparison - Development of gender gaps and educational policies**

**Keywords:** Competencies, Gender Issues, Large-scale Assessment, Sustainable Development

**Presenting Author:** Jonas Stampka, University Heidelberg, Germany; **Co-Author:** Nina Jude, University Heidelberg, Germany

Following the Agenda 2030 of the United Nations, gender disparities in education are to be eliminated (Sustainable Development Goal 4.5). Still, large scale assessments in education of recent years are showing that performances in reading and mathematics are significantly different between girls and boys for many countries. To understand such performance differences and the influence of global education goals on them, this study looks at the development of gender gap over time. Data from the OECD's Programme for international student assessment (PISA) will be used to describe variation over time in the gender gap for each participating country and to group countries by pattern of development. Those groupings are then explained by (inter)-national education policy. Discrepancies in explanations will be contextualized with macro culture theory and with findings of a systematic review on gender gaps. This research is still in progress, first steps and analysis have already been performed to test pregnancy of explained research proposal. Prospectively, the findings will show cross-country dynamics in education performance and policy measures. The approach follows explorative principles to better comprehend given data structures and methodical approximation.

### **Exploring the pro-environmental uses of Instagram by secondary school students and teachers**

**Keywords:** Citizenship Education, Environmental Education, Secondary Education, Social Media

**Presenting Author:** Rosemberg ross.franco, Pontificia Universidad Católica de Chile, Chile

Climate change is a global problem that challenges all human beings to change their lifestyles. This commitment has been adopted by the educational sector through education for sustainable development, and is also being widely adopted by the new generations, who use digital environments to promote pro-environmental behaviors that make the human-nature relationship more sustainable. The objective of this study is to understand through an exploratory qualitative methodology how Chilean chemistry teachers and high school students use and give pro-environmental meaning to the social network Instagram. With the purpose of contributing to knowledge regarding education for digital citizenship. In order to delve into the pro-environmental uses of Instagram, a digital participant ethnography was carried out for two years.

**keywords:** Environmental education, Citizenship education, social media, secondary education

The data collected through semi-structured interviews were approached from the reflective thematic analysis and the ethnographic experience was systematized from Instagram storage tools. Both analyses were conducted in parallel and contributed to the understanding of the exercise of pro-environmental digital citizenship. The results highlight the importance of environmental influencers for the dissemination of the problematic and increased levels of environmental awareness, as for digital participation is characterized by the consumption of information, there is low creation of pro-environmental digital content. In conclusion, the relevance of deepening pedagogical practices that promote pro-environmental digital citizenship through active participation in Instagram.

### **Generating active hope through uncertainty in a future-oriented course on climate change**

**Keywords:** Science Education, Secondary Education, Sustainable Development, Teaching/Instructional Strategies

**Presenting Author:** Lorenzo Miani, University of Bologna, Alma Mater Studiorum, Italy; **Co-Author:** Olivia Levrini, University of Bologna, Italy

In a society where, due to many social, environmental, political, and economic challenges, new generations lack the stability to be able to think positively and purposefully about their future, education must take responsibility for addressing these challenges and provide tools to navigate and guide through complexity and uncertainty. Building on the concept of active hope, we present a future-oriented course that addresses climate change from a science education perspective focused on an alternative view of the concept of uncertainty, i.e. the storyline approach, aimed at generating agency and concrete action. The course is based on the authors' long experience in educational reconstructions on topics such as complexity, simulations and models, and climate change, and a deep network created over the years with several local schools. It aims to change and innovate how climate change data and predictions are approached in classrooms, both from a content and instructional strategy perspective. We present a list of design principles to generate agency from uncertainty, the

implementation of the course and the data analysis.

#### **Emotions and social identity as drivers for environmental activism**

**Keywords:** Emotion and Affect, Environmental Education, Social Interaction, Sustainable Development

**Presenting Author:**Barbara Hrabetz, Universität Regensburg, Germany

Given the impact of climate change, environmental protection is becoming an increasingly urgent issue. Environmental activism can generate political pressure and thus lead to the necessary systemic changes. The reasons why people engage in environmental protection are complex, but a person's social identity has been shown to be a good predictor of environmental activism. However, little research has been done on the underlying mechanisms. One approach could be the emotional component of social identity. The aim of the study presented here is therefore to gain a deeper insight into the role that emotions play in the context of environmental activists' social identity and activist engagement in general. To explore this question, a qualitative approach was chosen. 18 activists were asked in semi-structured interviews about their feelings regarding environmental protection and their social identity. The data obtained was analysed using qualitative content analysis. Initial results indicate that negative emotions are a reason to become active, while positive emotions, especially regarding identification with an environmental group, can be a reason to stay active.

#### **Non-formal religious education: Worship service communities supporting families in changing society**

**Keywords:** Attitudes and Beliefs, Communities of Learners and/or Practice, Qualitative Methods, Social Aspects of Learning and Teaching

**Presenting Author:**Sini Niemelä, University of Eastern Finland, Finland

*Non-formal religious education: Worship service communities supporting families in changing society*

As the Finnish society has become more secular, less children get religious education. On the other hand, the emerging "community movement" in the Evangelical Lutheran Church of Finland attracts young families. Children's programs seem to be important for many such families. This research intends to find out the perceptions of non-formal religious education for minors in these communities; how the organizers understand non-formal religious education and the interplay between the worship service community and families. The research also attempts to learn how the expectations of parents and organizers of children's ministry meet, and what kind of experiences the children have of the ministry. The research has a phenomenographic approach, and data will be gathered by having interviews with leaders of children's ministry and those carrying out children's programs as well as with parents of the participating children. The children will complete a drawing task. The findings will serve these communities in planning their non-formal religious education. It will also add perspective into the discussion on non-formal religious education in the society.

#### **Exploring lived experiences of Colombian rural communities and their relationship with finance**

**Keywords:** Critical Thinking, Informal Learning, Lifelong Learning, Qualitative Methods

**Presenting Author:**Jose Sandoval-Llanos, Penn State, United States; **Co-Author:**Priya Sharma, The Pennsylvania State University, United States

In this research project, we use a sociocultural and equity-oriented theoretical framework to explore the lived experiences of Colombian rural communities and their relationship with finance. The increased role of financialization in people's everyday lives has augmented inequality and poverty levels in vulnerable populations. Alternative approaches to financial literacy are required to challenge the oppressive structures responsible for inequality and poverty and their effects on vulnerable populations. We used a qualitative approach to gather data from three rural Colombian communities from regions with particular political and economic histories that have shaped their realities. Data were analyzed using a grounded theory approach and we present two initial themes that emerged from the data including ambivalence about the impact of institutions on personal finances and learning about personal finances being important for personal practice. These themes evidenced the frustration and hope of these rural communities and encourage further analysis.

#### **Session E 9**

21 August 2023 13:30 - 15:00

UOM\_R03

Poster Presentation

Cognitive Science, Instructional Design, Motivational, Social and Affective Processes, Teaching and Teacher Education

#### **Mathematics, Science and STEM**

**Keywords:** Cognitive Skills and Processes, Curriculum Development, Educational Neuroscience, Instructional Design, Interest, Mathematics/Numeracy, Motivation, Primary Education, Qualitative Methods, Science and STEM, Science Education, Secondary Education, Teaching Approaches, Teaching/Instructional Strategies

**Interest group:** SIG 06 - Instructional Design, SIG 08 - Motivation and Emotion, SIG 11 - Teaching and Teacher Education, SIG 18 - Educational Effectiveness and Improvement, SIG 22 - Neuroscience and Education

**Chairperson:** YUXIN LIU, University College London, IOE, United Kingdom

#### **Promoting pedagogical content knowledge in mathematics teachers' education**

**Keywords:** Mathematics/Numeracy, Qualitative Methods, Secondary Education, Teaching/Instructional Strategies

**Presenting Author:**Monika Grigaliuniene, Vytautas Magnus University, Lithuania; **Co-Author:**Erno Lehtinen, University of Turku, Finland

As the importance of mathematical literacy and mathematical reasoning became more prominent, the effectiveness of mathematics teachers has become more important. For teachers to be able to provide instructional experiences that are optimally supporting high quality learning, they must have a certain kind of knowledge which is defined as pedagogical content knowledge [PCK]. Using systematic literature review as research method, this research is focused not only on generalizing tendencies of research on mathematics teachers' PCK, but also on findings and conclusions of them. To execute this goal, 90 research articles from 2011 to 2022 were included in the review. Recurrent and/or complementary findings on arithmetic, rational numbers, algebra, geometry, and other topics were found that can be practically applied in promoting PCK of prospective mathematics teachers during their studies.

#### **Differentiated instruction (DI): development and initial validation of a framework**

**Keywords:** Mathematics/Numeracy, Primary Education, Science and STEM, Teaching/Instructional Strategies

**Presenting Author:**Antje Kenis, University of Antwerp, Belgium

Dealing with the differences among students in the classroom is a major challenge for schools but is nevertheless the daily reality. Differentiation thus constitutes a necessity for teachers to achieve the greatest possible learning outcomes for each student. To date no comprehensive framework surrounding differentiated instruction (DI) exists, that includes crucial context factors. This study therefore aims to broadly map the stratification and the (context)factors of DI and subsequently develop and validate an instrument based on the framework, describing the extent to which teachers think and act according to the principles of DI in their classrooms, and the extent to which schools have a vision in this regard, called the Differentiated Instruction Questionnaire (DIQ). Based on the developed theoretical framework surrounding DI, a selection of scales was made of pre-existing validated instruments for the development of the DIQ. The combination of exploratory and confirmatory factor-analytical techniques was undertaken to investigate the psychometric qualities of the DIQ. The questionnaire was administered in the school team of 33 different primary schools in Flanders (Belgium). As a result, after confirming the validity and reliability of the DIQ, the questionnaire entailed 124 items and 22 scales. This study provides a comprehensive framework that examines DI from a broad viewpoint. Thus, DI is both a philosophy and a practice of teaching, which is ultimately framed within the school. In addition, the DIQ illustrated the measurability of these concepts.

#### **The effect on the working memory resource depletion on the spacing effect**

**Keywords:** Curriculum Development, Instructional Design, Mathematics/Numeracy, Secondary Education

**Presenting Author:**Kai Yin Chan, Loughborough University, United Kingdom; **Co-Author:**Ouhao Chen, Loughborough University, United Kingdom; **Co-**

**Author:**Tim Jay, Loughborough University, United Kingdom

The spacing effect occurs when learning with rest periods, named as spaced learning, is superior to learning without rest periods, named as massed learning. Cognitive load theory has explained the superiority of spacing effect by working memory (WM) resource depletion, under which resources are depleted when handling some cognitive activities for some time but restored after resting. Two experiments were conducted to provide evidence on how the working memory resource depletion hypothesis can explain the spacing effect. Experiment 1, using more complex learning materials, obtained both the spacing and WM depletion effects for learners with less knowledge, for whom the learning materials was high in element interactivity. For Experiment 2, more knowledgeable learners were tested using the same learning materials. Both the spacing and working memory resource depletion effects disappeared, for whom the same learning materials were lower in element interactivity. The results argued that WM resource depletion and replenishment might be more sensitive to materials high in element interactivity and suggested that it was only one of the multiple causes of the spacing effect.

#### **Interventions to Enhance Students' STEM Motivational Outcomes: A Systematic Review**

**Keywords:** Interest, Motivation, Science and STEM, Science Education

**Presenting Author:**Zhixing Guo, The University of Hong Kong, Hong Kong; **Co-Author:**Kai Guo, The University of Hong Kong, Hong Kong; **Co-Author:**Lishi Liang, The University of Hong Kong, China; **Co-Author:**Luke Fryer, The University of Hong Kong, Hong Kong

The increasingly important role that competencies in the field of STEM play in today's world (OECD, 2019) and the decline of students' STEM motivational outcomes (e.g., interest, motivation) at a young age (e.g., Haworth et al., 2008; Jacobs et al, 2002) make enhancing students' STEM motivation an urgent problem to be solved. Under this background, substantial motivation intervention studies have been conducted aiming to improve students' STEM motivational outcomes (e.g., Shin et al., 2022). However, to the authors' knowledge, no review has systematically synthesized these interventions in recent years. To fill this gap, the current review examines the STEM motivation intervention studies in the educational settings between 2008 and 2022 in order to (1) illustrate the types of motivation interventions related studies applied to enhance students' STEM motivational outcomes (e.g., interest, value, motivation), the targeting motivational outcomes of these interventions and the motivation theories (e.g., expectancy-value theory) these interventions are based on; (2) demonstrate the distribution of the participants' educational levels and graphical origins included in the interventions; (3) synthesize the effectiveness of different types of motivation interventions on enhancing STEM motivational outcomes for learners at different educational stages or with different dispositions (e.g., prior perceived competence, initial interest); (4) explore how these motivation interventions may further influence students' STEM-related outcomes (e.g., achievement, academic/career choices). The search and screening process is conducted according to PRISMA guidelines (Moher et al., 2009). The implications for future research and educational practices are indicated at the end of the review.

#### **How do familiarity and complexity influence the need for inhibitory control in high school science?**

**Keywords:** Cognitive Skills and Processes, Educational Neuroscience, Science and STEM, Secondary Education

**Presenting Author:**Karène Brindle, Université du Québec à Montréal, Canada; **Co-Author:**Lorie-Marlène Brault-Foisy, Université du Québec à Montréal, Canada; **Co-Author:**Élisabeth Bélanger, Université du Québec à Montréal, Canada; **Co-Author:**Steve Masson, Université du Québec à Montréal, Canada; **Co-Author:**Patrice Potvin, Université du Québec à Montréal, Canada

Many students experience difficulties when learning science in high school. Several studies have highlighted frequent and persistent errors among students and have explored the variables that may contribute to such difficulties. In this regard, two variables appear to relate to the nature of the learning content itself: 1- the *familiarity (F)* of an interfering conception, to which one has to resist, and 2- the *complexity (C)* of the scientific concept to be acquired. Recently, research has found that inhibitory control might be a central cognitive process of scientific reasoning that allows students to overcome intuitive conceptions in order to learn scientific concepts, when the situation requires it. However, the need for inhibitory control may not be equivalent for all learning content. Our assumption is that inhibitory control could be modulated by the above-mentioned variables: the more *familiar* the intuitive conception, the more difficult it may be to resist to; the more *complex* the scientific concept, the more difficult it may be to grasp and mobilize. To test these hypotheses, data was collected from high school students. Participants have performed four cognitive based on a negative priming paradigm allowing to highlight the mobilization of inhibitory control. Each of the tasks corresponded to experimental conditions related to the variables (see Table 1). The ongoing analyses will allow us to identify the individual and combined effects of the familiarity and complexity variables on the negative priming effect, representative of inhibitory control. Results will be available at the conference.

#### **Promoting interest in high school science among Palestinian students in East Jerusalem**

**Keywords:** Interest, Science Education, Secondary Education, Teaching Approaches

**Presenting Author:**Mohamed Amine Mahhou, University of Quebec in Montreal, Canada; **Co-Author:**Olivier Arvisais, Université du Québec à Montréal (UQAM), Canada; **Co-Author:**Patrice Potvin, Université du Québec à Montréal, Canada

Many researchers have attempted to understand the reasons behind the decline in interest in science among students during high school as well as ways in which it can be corrected. However, the scientific literature on this topic mostly includes studies that were conducted in highly institutionalized educational settings, and under stable political conditions. There is much less scientific literature when it comes to educational systems under great pressures. The Palestinian educational system in addition to being chronically affected by the lack of resources, is constantly challenged by such numerous acts of political violence affecting its different actors and sectors. Local researchers have indicated that Palestinian students show little interest in learning science. In this study, two concepts are put forward. First, the notion of *situational interest*, and secondly *contextualization of learning*. This research therefore proposes to develop, in collaboration with teachers, a contextualized pedagogical situation that has the potential to stimulate interest in science among East Jerusalem high school students, and then to test it with their students. Our hypothesis is that we will record a positive gain when compared to a regular pedagogical intervention. To test this hypothesis, we measured general interest first and secondly to assess the effect of our intervention we used the *situational interest questionnaire*. Our results appear to show that it is indeed possible to stimulate students' situational interest in science when they are offered activities that provide them the opportunity to learn within a context.

#### **Session E 10**

21 August 2023 13:30 - 15:00

UOM\_R05

Roundtable

Teaching and Teacher Education

#### **Teachers' Professional Development**

**Keywords:** Cognitive Skills and Processes, Competencies, Higher Education, In-service Teachers, Informal Learning, Knowledge Construction, Pre-service Teachers, Qualitative Methods, Teacher Professional Development, Video-based Learning

**Interest group:** SIG 11 - Teaching and Teacher Education

**Chairperson:** Özün Keskin, University of Augsburg, Germany

#### **Websites valued by teachers for professional knowledge and the criteria by which they are judged**

**Keywords:** In-service Teachers, Informal Learning, Knowledge Construction, Teacher Professional Development

**Presenting Author:**Samuel Fowler, University of South Australia, Australia

*The Internet has become a major source of informal teacher learning. This is despite the varying quality of teaching resources available. It is therefore important to explore what types of websites teachers are using and the criteria by which they judge the quality of these important sources of teaching knowledge. Forty five Australian K-12 teachers were surveyed about the websites from which they sourced pedagogical knowledge, content knowledge and pedagogical content knowledge. They were also asked to list important factors in determining the quality of a web resource. Results demonstrate that teachers are more likely to look to inspiration for pedagogical knowledge but utilize video and practical examples for their content and pedagogical content knowledge. Teachers were*

*overwhelmingly looking for contextually relevant information that mirrored their experience and was backed up by expertise and empirical findings. Implications related to informal online teacher professional knowledge dissemination are noted as well as pathways for future research.*

#### **Fostering pre-service teachers' knowledge integration by an interlinked learning opportunity**

**Keywords:** Cognitive Skills and Processes, Knowledge Construction, Pre-service Teachers, Teacher Professional Development

**Presenting Author:**Anna-Lena Molitor, Bergische Universität Wuppertal, Germany

Expert teachers have more and better-organised knowledge than pre-service teachers. For example, they have an integrated basis of the parts of professional knowledge (pedagogical psychological knowledge, content knowledge and pedagogical content knowledge). That is why one aim of teacher education should be the promotion of an integrated knowledge basis. One approach to do so is to offer joint courses, where the areas of professional knowledge are imparted in an interconnected way. As there is only few research so far, I want to investigate to what extent such a semester-long course supports pre-service teachers to integrate their knowledge and if students with more and better integrated prior knowledge benefit more than those without. After selecting contrasting cases (in terms of prior knowledge and its degree of integration) with the help of concept maps and a questionnaire, the students write a reflective essay about a pedagogical situation and think aloud data recording this process are collected. The coding contains two dimensions: (1) information-processing strategies and (2) knowledge use and integration. The coding is not finished yet, so no results can be presented. At the JURE I would like to focus on questions that arise during the data analysis, but also present first results.

#### **How pedagogical experiences are reflected: A script-theory approach to reflecting on videos**

**Keywords:** Competencies, Qualitative Methods, Teacher Professional Development, Video-based Learning

**Presenting Author:**Katrin Arendt, Universität des Saarlandes, Germany; **Co-Author:**Lisa Stark, Saarland University, Germany; **Co-Author:**Anja Friedrich, Universität des Saarlandes, Unknown; **Co-Author:**Roland Bruenken, Saarland University, Germany; **Co-Author:**Robin Stark, Saarland University, Germany

The reflective competence of teachers is an important component of their professionalization. Therefore, reflection is highly debated in current research (Brown et al, 2021). It is also associated with high expertise (Gruber, 2021). However, the process of reflecting has not been clarified in research yet. This dissertation project aims at analysing and promoting the processes of reflecting on pedagogical experiences. An approach of script-theory (Fischer et al., 2013) is applied to better understand this complex process. Teachers' reflective scripts will be investigated in a first study, which raises the following research questions: (1) To what extent can a script of reflecting processes on pedagogical experiences be identified? (2) Can different groups of teachers be identified that differ regarding their reflecting scripts of pedagogical experiences?  $N=30$  teachers are interviewed in an exploratory qualitative design. Therefore, two instructional videos are used showing authentic teaching sessions. Also, questionnaires on reflection-related dispositions and personality factors are used. After watching a video, the teachers are asked to reflect on them. The interviews are transcribed and coded by two independent coders. The analysis of the coded interviews is done inductively to find a possibly consistent reflecting script in the teachers' elaborations. Based on the coding, the data will be grouped using cluster analysis. For the roundtable it will be discussed to what extent the connection between expertise and experience is relevant in connection with reflection as a teachers' professional competence and how the teachers' reflections can be analysed with reference to reflecting scripts.

#### **Disciplinary culture in pre-service teacher education at a German university**

**Keywords:** Higher Education, Pre-service Teachers, Qualitative Methods, Teacher Professional Development

**Presenting Author:**Tahnee Herzig, Justus-Liebig-Universität Giessen, Germany

Disciplinary cultural research is based on Bourdieu's (1992) concept of habitus and assumes that socialisation processes lead to a joint group-specific habitus among students who study in the same disciplinary culture (Liebau & Huber 1985). Disciplinary culture affects the entire study. The aim of this qualitative study is to gain greater knowledge of the characteristics of disciplinary culture in pre-service teacher education in Germany. For data collection seven narrative interviews were conducted with teacher students at a German university in 2022. The survey method is based on the narrative map method, which combines narrative interview and sketching (Behnken & Zinnecker 2010). The interviews and sketches are evaluated with a qualitative (image) content analysis. It appears to be characteristic of disciplinary culture in teacher education that there is a clear focus on the specific professional future, often accompanied by anticipation for teaching practices and simultaneous concern about being up to the task of working as a teacher. Assumingly, this leads to a utility-oriented studying. Thus, the students request more practical experiences, expecting to give them possibility of self-assessment and confirmation as well as a sense of being well prepared for working as a teacher.

#### **Session F 1**

21 August 2023 15:30 - 17:00

UOM\_A10

Invited Symposium

Motivational, Social and Affective Processes

#### **Motivation and Emotion in Education in Uncertain Times**

**Keywords:** Attitudes and Beliefs, Emotion and Affect, Engagement, Foreign and Second Language Acquisition, Informal Learning, L1/Standard Language Acquisition, Learning Strategies, Motivation, Primary Education

**Interest group:** SIG 08 - Motivation and Emotion

**Chairperson:** Julia Morinaj, University of Bern, Switzerland

**Organiser:** Julia Morinaj, University of Bern, Switzerland

**Organiser:** Juliane Schlesier, University of Vechta, Germany

**Discussant:** Barbara Moschner, Carl von Ossietzky Universität Oldenburg, Germany

Students' motivation, emotions, well-being, and engagement in learning are crucial for learning processes—especially in times of global change and uncertainty—and the development of our societies. Evidence-based knowledge on students' motivation and emotions can provide valuable insights into how to support them in times of uncertainty, foster their engagement and interest in learning, thus bringing some certainty to the field of education. Thus, the goals of this symposium are to (a) share research findings on motivation and emotion in education in uncertain times and (b) highlight their implications for successful education and sustainable development. In particular, the studies examine: how control and value beliefs are related to the valence and arousal of emotions in learning situations among university students in Austria (presentation 1); how epistemic engagement of young adults in Cyprus with a controversial social media post is guided by their epistemic beliefs and goals, as well as source and evidence evaluation processes (presentation 2), and how self-control and intrinsic and extrinsic motivation influence Swiss primary school students' engagement in the classroom (presentation 3). Taken together, the findings of the four studies conducted in three different countries (Germany, Cyprus, Switzerland) shed further light on the impact of motivation and emotions on learning in uncertain times.

#### **Cognitive Appraisals and Dimensions of Achievement Emotions**

**Presenting Author:**Elisabeth Graf, University of Vienna, Austria; **Presenting Author:**Lisa Stempfer, University of Vienna, Austria; **Co-Author:**Johanna Donath, University of Vienna, Austria; **Co-Author:**Wolfgang Steiner, University of Vienna, Austria; **Co-Author:**Thomas Götz, University of Vienna, Austria

In educational psychology, numerous studies have found support for the predictive power of control and value appraisals for discrete achievement emotions (Control-Value Theory [CVT]; Pekrun, 2000). Commonly, it was observed that high control coincides with positive emotions, whereas low control is more strongly related to negative emotions. However, emotions are not only distinguished by their valence (pleasant versus unpleasant emotions). The well-known Circumplex Model (CPM; Russell, 1980) proposes physiological arousal as the second dimension to categorize emotions (activating versus deactivating emotions). Although the CVT states to be consistent with Russell's CPM, it remains unclear, how control and value antecedents relate to emotion's arousal component. Therefore, we tested the relation of control and value antecedents with valence, arousal, and emotions in learning situations. We used data from a 2-week experience sampling study with 118 university students in Austria, and calculated intra- and inter-individual bivariate correlations. Preliminary findings replicated results on the positive correlation between control appraisals and the valence dimension – as high control correlates with positive valence and

positive emotions. More complex patterns were revealed for the relation between different components of value appraisals and the arousal dimension. The results of the study highlight the importance of distinguishing between different components of value appraisals in order to uncover possible conflicting relationships between value and discrete emotions.

#### **Emotions, actions, and epistemic engagement with a controversial social media post**

**Presenting Author:**Christiana Varda, Cyprus University of Technology, Cyprus; **Co-Author:**Eleni Kyza, Cyprus University of Technology, Cyprus

Online, people encounter and evaluate information on controversial scientific issues, which can evoke emotions and lead to online actions, such as sharing or liking a post. Empirical studies indicate that beliefs about knowledge influence information evaluation, but how this manifests via online epistemic practices is less clear. In a recent experimental study with adults (n=242), we found that actions such as commenting on a post or following an account were predicted by more constructivist epistemic beliefs. This follow-up qualitative study sought to examine how online actions may indicate epistemic engagement by considering how authentic online actions on a controversial social media post are guided by epistemic beliefs, epistemic aims, and source and evidence evaluation while experiencing emotions. Thirteen young adults reported their emotions and online actions on an interactive simulated tweet, calling for a reduction of meat consumption due to climate change impact. Data were collected using semi-structured interviews along with screen recordings. Data were coded for explicit mentions of emotions and actions. Reported reasons for actions were coded for epistemic cognition. Participants experienced a range of emotions, including epistemic and non-epistemic emotions, though curiosity was reported the most. They also took a range of actions, such as clicking on the accompanying link, checking the comments below the post, and "liking" the post. Analyses indicate that such actions were indicative of epistemic engagement since they were motivated by epistemic aims, epistemic beliefs, source and evidence evaluation. Instructional approaches can focus on exploring how epistemic actions can support information evaluation.

#### **Elementary students' self-control, intrinsic and extrinsic motivation, and engagement during class**

**Presenting Author:**Charlotte Baez, Sankt Gallen University of Teacher Organisation, Switzerland; **Co-Author:**Franziska Vogt, St.Gallen University of Teacher Education, Switzerland; **Co-Author:**Doris Kunz Heim, PH FHNW, Switzerland

Student engagement during a class generally is assumed to predict student academic performance (Finn et al., 1995; Hattie & Anderman, 2013). Nevertheless, there are only few empirical studies investigating which factors influence student engagement in primary school children. This study aims to tackle this research gap by looking at how self-control as well as intrinsic and extrinsic (teacher-, parent-, and/or classmate-related) motivations impact observed student engagement during a class. Further, this study investigates, how self-control might moderate the impact of motivation on student engagement during a class. Our sample consisted of 618 students in 34 fifth grade primary school classes in Switzerland (49.6 % girls,  $M = 11.4$  years old). Student data was collected with three instruments at two different time points. First, a 'trait' student questionnaire was conducted. Second, about a week later, a 'state' student observation and a 'state' post-lesson student questionnaire took place. The results from a two-level structural equation model indicated that, on the student level, self-control as well as state intrinsic motivation and classmate social norm regarding engagement during class positively predicted observed student engagement during a class. Teacher- or parent-related extrinsic motivation negatively predicted student engagement during a class. A significant moderation effect of self-control was found for the impact of intrinsic motivation on student engagement: Intrinsic motivation predicted on-task engagement more strongly for students with a higher level of self-control. Accordingly, self-control might be important for students' enactment of their intrinsic motivation. Study limitations and implications will be presented at the conference.

#### **Session F 2**

21 August 2023 15:30 - 17:00

UOM\_A04

Single Paper

Higher Education, Teaching and Teacher Education

#### **Teachers' Professional Development**

**Keywords:** Conceptual Change, Dialogic Pedagogy, Lifelong Learning, Metacognition, Peer Interaction, Qualitative Methods, Social Interaction, Teacher Professional Development, Teaching Approaches, Teaching/Instructional Strategies

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

**Chairperson:** Theresa Bauer, Technical University of Munich, Germany

#### **Teacher learning of academically productive talk: a transcontextual analysis of revoicing**

**Keywords:** Dialogic Pedagogy, Qualitative Methods, Teacher Professional Development, Teaching/Instructional Strategies

**Presenting Author:**Merav Sara Levin, The Hebrew University of Jerusalem, Israel; **Co-Author:**Christa Asterhan, Hebrew University of Jerusalem, Israel; **Co-Author:**Adam Lefstein, The Hebrew University of Jerusalem, Israel

This research explores why well-established knowledge about academically productive classroom talk (APCT) is not commonly practiced in classrooms despite multiple initiatives to promote it. We address this question by investigating how *teacher revoicing*—a central pedagogical notion in APCT research—moves and changes through different contexts until its enactment in classrooms. The research is part of a larger initiative aimed at supporting teachers to increase their APCT use in upper elementary Hebrew language arts lessons in a large Israeli school district. We use linguistic-ethnographic transcontextual analysis to address our research question. Our data include all the contexts in which revoicing surfaced in the initiative to implement APCT in classrooms, e.g., training materials and transcriptions of teachers' meetings. We map the differences between these manifestations of revoicing and identify the factors that may have shaped these differences.

Methodologically, transcontextual analysis enabled us to reveal phenomena usually difficult to trace, such as long-term, gradual changes continuing over different stages in pedagogical reform. Comparing the manifestations of revoicing exposed the creation and gradual widening of the gap between its meanings in the academic literature and in other contexts. The factors likely to have affected these changes included traditional educational discourse, available resources and organizational structures within PLCs. The research illustrates the complexity and multiplicity of influences on teacher learning and thus deepens our understanding of it. By adopting a broader perspective on pedagogical reforms, the study provides a possible explanation for why their reality often differs from their conception and aims.

#### **Contextually aware methods for investigating epistemic cognition in teacher professional learning**

**Keywords:** Conceptual Change, Metacognition, Qualitative Methods, Teacher Professional Development

**Presenting Author:**Samuel Fowler, University of South Australia, Australia; **Co-Author:**Lesley Johnson, University of South Australia, Australia

*The intricate interplay of teacher professional learning (TPL) and epistemology requires analysis if we wish to impact teacher practice. Due to the nature of teaching, it is important that this interaction is explored by practical, contextually relevant methods. Methods which fit with teacher's everyday understandings and give insight into their epistemic beliefs. This paper explores three such methods used within a larger design-based research project. The first method challenges teachers to compare opposing teaching practices and justify their epistemic choices. The second method constructs epistemic ideals before comparing them to proposed practice. The third method utilises guided reflexive questioning within a video diary to document changing epistemic beliefs. Initial results are discussed and recommendations for later iterations proposed.*

#### **Rapports with students: conceptualized roles of the instructors at a Central European university**

**Keywords:** Qualitative Methods, Social Interaction, Teacher Professional Development, Teaching Approaches

**Presenting Author:**Zsófia Frányó, ELTE University, Faculty of Education and Psychology, Hungary

This study explores academics' perceptions about their classroom work at a leading university of applied sciences in Central Europe. Interview data with 33 instructors was analyzed, using an inductive analysis method, to describe the different conceptualizations of the instructors regarding the rapport with students. The analysis revealed that they have the same goals, they face similar challenges of students' concentration, motivation and involvement, but they have qualitatively different conceptualizations of the possibilities, the impact of the instructor and the potential of the rapport with the students. A phenomenographic hierarchy of conceptualized roles was thus built to describe the various acting patterns that instructors use to establish rapport with their students. These conceptualizations highly depend on the personality of the instructor but may also be described as stages in the development process which can evolve over time. Beyond generic implications, the most advanced identified dimension of "being a port" has been highlighted.

#### **Autobiographical Narratives and Peer Reflection as a source of Teacher Professional Learning**

**Keywords:** Lifelong Learning, Peer Interaction, Qualitative Methods, Teacher Professional Development

**Presenting Author:** Emily Hills, University of Canberra, Australia

This paper will discuss the findings of an Education Doctorate that investigated the place and power of teacher autobiographical narratives as a source of professional learning and reflection. This paper will firstly present an overview of the methodology used to investigate the research problem and then discuss the unique findings and implications of these findings for teachers and researchers. The focus of this paper will be on how teacher autobiographical narratives can be a source of reflection and co-learning when they are engaged with alongside a peer. The implications of the study's findings in the 21<sup>st</sup> Century learning context, as a way to support teachers to draw from their own lived experiences as a source of professional learning and knowledge, elevate the rich and diverse lived experiences that teachers bring into their classrooms each day and places value on these narratives as a source of knowledge when they are shared and purposefully reflected on with their peers.

#### **Session F 3**

21 August 2023 15:30 - 17:00

UOM\_A11

Single Paper

Learning and Special Education, Teaching and Teacher Education

#### **Learning and Development in Early Childhood**

**Keywords:** Creativity/Divergent Thinking, E-learning/ Online Learning, Early Childhood Education, Inclusive Education, Migrant / Refugee and Minority students, Mixed-method Research, Multicultural Education, Qualitative Methods, Special Education, Teaching/Instructional Strategies, Vocational Education and Apprenticeship Training

**Interest group:** SIG 05 - Learning and Development in Early Childhood, SIG 28 - Play, Learning and Development

**Chairperson:** Alexandra Katsiki, National & Kapodestrian University of Athens, Greece

#### **Are online development programmes an attractive setting for early childhood educators?**

**Keywords:** E-learning/ Online Learning, Early Childhood Education, Mixed-method Research, Vocational Education and Apprenticeship Training

**Presenting Author:** Sarah Feierabend, University of Graz, Austria; **Co-Author:** Eva Pözl-Stefanec, University of Graz, Austria

Due to a glaring shortage of specialists in early childhood education in Austria, various online professional development (OPD) programmes can contribute to the professionalisation of early childhood educators. Since the outbreak of the COVID-19 pandemic, OPD programmes have been increasingly offered to the target group of Early Childhood Educators (ECE) in German-speaking countries and have also been used more frequently. A mixed-methods study consisting of group discussions and a questionnaire survey will provide insights into ECE's wishes regarding the various settings of OPD. To answer the question 'From the perspective of ECE, how should OPD programmes be designed so that ECEs like to attend them?', five professionals were interviewed qualitatively in two group discussions and 350 early childhood professionals participated in a questionnaire survey. The results of the qualitative questionnaire showed that the professionals described both the advantages and disadvantages of OPD programmes. Additionally, the results of the online questionnaire showed that almost all respondents (online survey and paper-pencil survey) have participated in OPD programmes in recent years. Therefore, OPD programmes are an integral part of the professionalisation of ECE. In the future, the question of how OPD programmes should be designed to contribute to the professionalisation of professionals must be addressed.

#### **How to understand Creative Thinking in kindergarten children from Teacher-Child interactions**

**Keywords:** Creativity/Divergent Thinking, Early Childhood Education, Mixed-method Research, Teaching/Instructional Strategies

**Presenting Author:** Yasmin Fong, The Education University of Hong Kong, Hong Kong; **Co-Author:** James Ko, The Education University of Hong Kong, Hong Kong; **Co-Author:** Jin Sun, The Education University of Hong Kong, Hong Kong

Creativity enhancement in the early years has been an increasingly researched educational topic that continues to garner attention, where the consensus focuses on promoting creativity and self-expression in young children. The teacher's role in instruction and facilitation becomes crucial in supporting children's creative development (Fleer, 2015). However, it remains uncertain how educators' practice contributes to the theoretical learning process of creativity. Adopting Webster (1990)'s definition of creative thinking in describing creativity within the education context, the study measures changes in young children's creative thinking after participating in designed art activities. The experimental study investigated how teacher-child interactions supported children in their creative endeavours. In particular to creative thinking, the study focused on facilitation that promoted children's concept-building, feedback that kept them engaged in the activity and encouragement that expressed their points of view. The designed interactional strategies focused on engaging children through the dimensions of concept development, child's perspective, engagement with feedback, responsiveness, learning objectives, and maximised time. Teaching language was modelled from the effective interactions outlined in the Classroom Assessment Scoring System framework (Pianta et al., 2008). The sample analysed 340 artworks by 60 Hong Kong kindergarten children, where local early childhood practitioners remained dominantly teacher-directed in their interactions. It proposed an investigative inquiry to test how children's creativity would engage when teacher-child interactions became more open. Results reported the effectiveness of teacher-child interactions in instructions that focused on facilitating children's perspectives. The findings contributed to integrating effective teacher-child interactions and instruction in enhancing creativity in early childhood settings.

#### **Intercultural interpreter-mediated parent-educator talks in childcare centres**

**Keywords:** Early Childhood Education, Migrant / Refugee and Minority students, Multicultural Education, Qualitative Methods

**Presenting Author:** Fabienne Bohler, University of Teacher Education St.Gallen, Switzerland; **Co-Author:** Franziska Vogt, St.Gallen University of Teacher Education, Switzerland

The participation of children with a migration background in early childhood education can facilitate integration into society (Edelmann, 2018). However, educators can experience cooperation with families, who do not speak the local language well, as challenging (Sulzer, 2013). Through language "power imbalance, social asymmetries and norms" are discursively produced (Panagiotopoulou, 2017). Intercultural interpreters can act as a link between parents and educators and contribute to balancing the asymmetrical power imbalance (Moreno, 2018). There is almost no existing research on parent-educator talks supported by intercultural interpreters in early childhood education. The study therefore seeks to explore the structure, content, and social interaction of the talks. The study is embedded within a large project promoting language fostering in childcare centres for second language learners. Experiences show that many childcare centres do not focus educator-parent cooperation systematically and have difficulties to address complex topics due to language barriers. The qualitative study is based on audio recordings of the talks. For data analysis Grounded Theory Method is employed. The results will provide evidence on the characteristics of interactions between parents and educators supported by intercultural interpreters in childcare centres.

#### **Feasibility and fidelity in implementation of a peer-based intervention for social play**

**Keywords:** Early Childhood Education, Inclusive Education, Special Education, Teaching/Instructional Strategies

**Presenting Author:** Maria Gladh, Stockholm University, Sweden; **Co-Author:** Eva Siljehag, Stockholm University, Sweden; **Co-Author:** Mara Westling Allodi, Stockholm University, Sweden; **Co-Author:** Sam L. Odom, University of North Carolina, United States

Policies of early childhood education (ECE) emphasizes the significance of social play with peers for children's well-being, learning, development, social participation, and of inclusion. In Swedish ECE settings, the principle of children's agency, with access to free play is also important. Previous studies show that children with disabilities and other special educational needs (SEN) could risk engaging less in social play with peers. Previous studies also show that it could be challenging in inclusive ECE teaching to balance the principles of agency and social participation for all children, with the concept of explicit teaching. Peer-based intervention and instruction (PBII) constitute a recommended practice for learning social skills and promoting social play between children in inclusive settings. In order to examine such, researchers need to consider the implementation context and the fidelity of the intervention, both in terms of its procedures and content. This presentation provides examples of a multiple case study, exploring the implementation of a PBII for social play skills, in four inclusive Swedish preschools. It aims to contribute to discussing the implementation of complex interventions, and means for treating feasibility and treatment fidelity in various local ECE contexts, where views of social play, social learning, teaching, and care might vary.

#### Session F 4

21 August 2023 15:30 - 17:00

UOM\_A07

Single Paper

Assessment and Evaluation

#### Collaborative Learning and Peer Feedback

**Keywords:** Assessment Methods, Classroom Assessment, Feedback, L1/Standard Language Acquisition, Peer Interaction, Writing/Literacy

**Interest group:** SIG 01 - Assessment and Evaluation, SIG 12 - Writing

**Chairperson:** Christian Thurn, ETH Zurich, Switzerland

#### Sending and receiving peer feedback: Influence on middle school students' writing performance

**Keywords:** Feedback, L1/Standard Language Acquisition, Peer Interaction, Writing/Literacy

**Presenting Author:** Gyeonghoon Yoon, High School Attached to College of Education, Dongguk University, Republic of Korea; **Co-Author:** Hyeoun Kim, Dongguk University-Seoul, Republic of Korea

While many studies have mainly focused on the effects of receiving feedback, few has been conducted in relation to measuring the process and outcome from the perspective of sending feedback. However, considering that peer writing feedback can be regarded as a way of collaborative writing, sending a feedback can be as much meaningful as receiving one. The current study thus aims to understand various dimensions of peer writing feedback by comparing the influences of receiving and sending patterns of middle school students' peer feedback on their writing performance. To this end, 115 middle school students participated in this study. They wrote a book review and performed peer feedback on their colleagues' draft. Then, they reported their awareness on peer feedback activities. Types of feedback were coded into 6 categories: simple impression feedback, error-pointing feedback, commentary feedback, alternative feedback, question feedback, and experiential feedback. As a result, the influence of receiving peer feedback was not significant for all feedback types. However, giving peer feedback yielded a significant influence for certain feedback types. From these results, we found that the experience of peer feedback itself can have a significant effect on improving writing ability and that the act of responding to other people's writing may expand the metacognitive awareness on the writing process.

#### An experimental study comparing assessor and assessee roles in peer assessment.

**Keywords:** Assessment Methods, Classroom Assessment, Feedback, Peer Interaction

**Presenting Author:** David Zamorano, Universidad de Deusto, Spain; **Co-Author:** Maryam Alqassab, Universidad de Las Palmas de Gran Canaria, Spain; **Co-Author:** Ernesto Panadero, Universidad Deusto, Spain; **Co-Author:** Alejandro Amillano Solano, University of Deusto, Spain

In peer assessment, students can act as assessors or assessees (or both). When acting as an assessor, the student judges the correctness of their peers' work to provide scores and/or suggestions on the work. When playing the assessee role, the student receives feedback from peers and can choose to modify their work accordingly. Research have suggested that the roles might influence students' learning differently. However, experimental or quasi-experimental studies that directly compare the differential impact of these roles on peer assessment outcomes are scarce. Thus, using a within-subject experimental design the present study examines the effects of the two roles student play in peer assessment (assessor and assessee) on four outcome variables: (1) performance in a subsequent related task, (2) implementation of peer feedback comments (given and received) in a subsequent related task, (3) processing of the feedback received vs peer solution measured by eye-tracker movements (proportional dwell time)), (4) perceptions of giving and receiving peer feedback (e.g., trust, engaging, learning). Preliminary results show that before the intervention students are almost equally confident of the feedback received and the feedback they provide. Moreover, they generally valued peer feedback as an instructional method, and they consider it an important skill. The study is in progress, differences in the abovementioned outcome variables will be reported during the conference. Implications of the study funding's on how to consider the roles of assessor and assessee when implementing peer assessment in classroom settings will be discussed.

#### Session F 5

21 August 2023 15:30 - 17:00

UOM\_R01

Poster Presentation

Educational Policy and Systems, Learning and Special Education

#### Special Education and Learning Difficulties

**Keywords:** At-risk Students, Computer-assisted Learning, Dialogic Pedagogy, Early Childhood Education, Educational Policy, Gifted and Talented Students, In-service Teachers, Inclusive Education, Large-scale Assessment, Learning and Developmental Difficulties, Learning and Developmental Disabilities, Meta-analysis, Mixed-method Research, Multimedia Learning, Parental Involvement in Learning, Primary Education, Quantitative Methods, Reading, Resilience, Special Education, Teaching Approaches

**Interest group:** SIG 14 - Learning and Professional Development, SIG 15 - Special Educational Needs, SIG 26 - Argumentation, Dialogue and Reasoning

**Chairperson:** Aaron Peltoniemi, University of Jyväskylä, Finland

#### Digitalisation of Education and its impact on education policy for Children with Special Needs

**Keywords:** Early Childhood Education, Educational Policy, Inclusive Education, Primary Education

**Presenting Author:** Sara Grover, PH Zürich, Switzerland

*Empirical knowledge and data on digital learning methods for children with special needs (CWSN) is limited, as is the availability of research expertise, resources and funding. In this light, this research seeks to focus on three broad-based objectives - (i) investigating issues that persist in introducing digital technologies in education and policies for CWSN, (ii) mapping the scale and scope of these issues in elementary education, (iii) examining the challenges or possible barriers that persist in introducing a policy for children with special needs. The overarching research question is to understand the promises and pitfalls of using technology for CWSN. The next steps would be to cross-validate these research priorities with the two sets of relevant stakeholders. One being researchers/pedagogues focusing on digital technologies for CWSN and the other being private sector companies focusing on digital tools for CWSN. These two sets of stakeholders come from different schools of thought and it would be interesting to see what barriers do they envision for the digitalisation of education in the context of CWSN. The content analysis of these qualitative interviews will be complemented by the collection and analysis of relevant policy*

documents on a national level and in the canton of Zurich. The study aims to contribute to a better understanding of digital transformation in education for CWSN in Switzerland and to provide insights into the factors that affect the integration of technology in education.

#### **Teachers' Perceived Impact of Parents and School Leaders on Gifted Education**

**Keywords:** Gifted and Talented Students, In-service Teachers, Mixed-method Research, Parental Involvement in Learning

**Presenting Author:**Jessica Vergeer, Radboud University Nijmegen, Behavioural Science Institute, Netherlands; **Co-Author:**Marjolijn van Weerdenburg, Radboud University Nijmegen, Behavioural Science Institute, Netherlands; **Co-Author:**Trudie Schils, Maastricht University, School of Business and Economics, Netherlands; **Co-Author:**Anouke Bakx, Fontys University, Radboud University, Netherlands

From a systemic perspective, it seems likely that the success of interventions for gifted students may depend on involvement of different environmental (f)actors in the system around the student. Therefore, this project focuses on the impact of environmental (f)actors on educational interventions for gifted students, in order to improve inclusive primary and secondary education for Dutch gifted students. More specifically, this study focuses on teachers' satisfaction with and perceived impact of the involvement of and their interaction with parents and school leaders on these educational interventions. The study maps the general educational satisfaction of teachers, as well as interaction and collaboration between these actors, investigated from the perspective of teachers.

In order to measure this, a questionnaire was distributed to primary and secondary school teachers, and interviews were conducted. Overall, primary school teachers that do provide gifted education were generally more satisfied with the education of gifted students at their school than secondary school teachers. The analysis of the interviews showed that teachers believe that school leaders are a very important actor, especially for enabling financial resources. Teachers also indicated that parents often show up at school when things are not going well. Primary school teachers indicated that parents are involved in decision-making processes, whereas secondary school teachers indicated that the students themselves are responsible for those processes. Students' ecology seems to indicate that good communication and collaboration can contribute to realising better and more fitting interventions for gifted students.

#### **Co-teaching as a common space for teachers and students learning- a case study**

**Keywords:** Inclusive Education, Primary Education, Special Education, Teaching Approaches

**Presenting Author:**Maria Rönn-Liljenfeldt, Åbo Akademi University, Finland; **Co-Author:**Christel Sundqvist, Åbo Akademi University, Finland

Co-teaching between a special education teacher (SET) and a general education teacher (GET) has been brought forth as an inclusive teaching approach that allows teachers to support heterogeneous groups of students together. In this study, a qualitative multiple case study design was used to capture the GETs and the SETs descriptions of the development of co-teaching and the possibilities of co-teaching for teachers and students. Data were collected through focus group interviews with teachers in three Finnish primary schools. The teachers had various experiences of co-teaching and the use of co-teaching differed between schools. The focus groups are presented as three different cases even though patterns and themes from the analysis are compared across the three cases to better understand what affects the initiation and development of co-teaching in schools.

#### **Road to Resilience in Reading**

**Keywords:** At-risk Students, Primary Education, Reading, Resilience

**Presenting Author:**Sanne Appels, University Utrecht, Netherlands; **Co-Author:**Sara van Erp, University Utrecht, Netherlands; **Co-Author:**Sietske van Viersen, University Utrecht, Netherlands; **Co-Author:**Lisette Hornstra, Utrecht University, Netherlands; **Co-Author:**Elise de Bree, Utrecht University, Netherlands

This poster presents the Road to Resilience in Reading project (RiR). In this project, we aim to unveil the mechanisms behind resilient trajectories in atypical literacy acquisition by using and developing state-of-the-art Bayesian techniques. To more fully understand these mechanisms, it is essential to learn more about successful language and literacy development in the face of adversity. We therefore move beyond the tradition of identifying risk factors for atypical development and shift focus towards protective factors and compensation. To make this unique approach work, we apply and further develop Bayesian statistical techniques (i.e., Bayesian SEM with shrinkage priors) that provide essential solutions for the possibilities and challenges of developmental observational data.

#### **Word decoding & reading comprehension of students with SLD-dyslexia in synthetic & natural speech**

**Keywords:** Computer-assisted Learning, Learning and Developmental Disabilities, Multimedia Learning, Special Education

**Presenting Author:**Maria Zezou, University of Macedonia, Greece; **Co-Author:**Vassiliki Giannouli, University of Macedonia, Greece

The aim of this study is to investigate the way in which word-sentence decoding and reading comprehension in conjunction with the recall of verbal short-term memory information can be enhanced when students with and without specific learning difficulties-dyslexia are exposed to information that are presented through the auditory channel, the visual channel and the audio-visual channel simultaneously (bimodal presentation) in synthetic and natural speech environments. The material is presented in Greek in three conditions: auditory (in synthetic and natural speech), visual (on screen) and audio-visual (in synthetic and natural speech while simultaneously displayed on the screen). Approximately 300 students take part in this study: 150 students (a minimum of 75 students without specific learning difficulties-dyslexia and 75 with specific learning difficulties-dyslexia) are in 5<sup>th</sup> and 6<sup>th</sup> grade of primary school and 150 students (a minimum of 75 students without specific learning difficulties-dyslexia and 75 with specific learning difficulties-dyslexia) are in 1<sup>st</sup> and 2<sup>nd</sup> grade of secondary school. A particular text-to-speech program is used called "JAWS" (Job Access With Speech), which is a synthetic speech program for the presentation of the material in synthetic speech in auditory and audio-visual condition. It is expected that text-to-speech programs like "JAWS" (which is used in this research) will have a positive impact on word-sentence decoding, as well as reading comprehension of students with dyslexia. Furthermore, audio-visual presentation is expected to benefit students with and without specific learning difficulties-dyslexia in word-sentence decoding, memory recall and reading comprehension. Key words: decoding, reading comprehension, audio-visual presentation, verbal short-term memory, text-to-speech programs

#### **Experiences and Perceptions in Dialogue of Low vs. High-Achieving Students and their Teachers**

**Keywords:** Dialogic Pedagogy, Inclusive Education, Large-scale Assessment, Quantitative Methods

**Presenting Author:**Dina Yosef, The Hebrew University of Jerusalem, Israel; **Co-Author:**christa asterhan, The Hebrew University of Jerusalem, Israel; **Co-Author:**tony gutentag, The Hebrew University of Jerusalem, Israel

#### **Abstract**

In Academically Productive Dialogue (APD) classes, the goal is to ensure that all students have the opportunity to be active participants in discussions, regardless of their academic ability or background (e.g., Clarke, 2015). However, despite the vast amount of research and theory on the topic of dialogic teaching and learning, very little attention has been dedicated thus far to individual student differences in dialogic classrooms, and in particular, students with learning difficulties. One way of investigating the benefits of APD to low-achieving students is by hearing their opinions on the matter. Most of the research on APD use video observations to analyze classroom discourse. However, video observations do not provide direct information about the students' experiences and perceptions of this type of teaching. This can only be acquired by directly asking the students. Students' experiences and perceptions where indeed captured by in-depth qualitative interviews, however to test this in large-scale quantitative research is needed. Hence, in the current investigation, through large-scale quantitative research, our aim is to examine students' experiences and perceptions following an APD intervention program in upper elementary classroom discussions in Israel. We analyze students' responses, examining achievement (high vs. low) as a potential moderator. In addition, student responses will be coupled with their teacher's responses, in order to see the compatibility between their experiences and perceptions, and whether teachers' characteristics are related to their students' experiences and perceptions.

#### **Are speech sound difficulties a marker of difficulties in language and later reading skills?**

**Keywords:** At-risk Students, Learning and Developmental Difficulties, Meta-analysis, Reading

**Presenting Author:**Line Walquist Sørii, UiT The Arctic University of Norway, Norway; **Co-Author:**Trude Nergard Nilssen, UiT The Arctic university of Norway, Norway; **Co-Author:**Monica Melby-Lervåg, University of Oslo, Norway; **Co-Author:**Bjarte Furnes, University of Bergen, Norway; **Co-Author:**Ømur Caglar-Ryeng, UiT The Arctic University of Norway, Norway

**Abstract**This systematic meta-analysis reviews 66 publications that have examined children with speech sound disorders and their skills in language and later

reading. To be included in the review, the studies had to compare groups of children with and without speech sound difficulties in preschool age on language and/or later reading skills or be cross-sectional and longitudinal studies focusing on relationship between speech sound skills and language and/or reading. The studies were coded, and Hedges'  $g$  was calculated for group differences. For the studies with individual differences uncorrected bivariate Pearson's correlations were coded and transformed to Fisher's  $z$  to adjust to a normal distribution. The result will be analysed with R package Robumeta and will be ready to present at the EARLY conference.

## Session F 6

21 August 2023 15:30 - 17:00

UOM\_R02

Poster Presentation

Assessment and Evaluation, Teaching and Teacher Education

### Teaching and Teacher Education

**Keywords:** Attitudes and Beliefs, Communities of Learners and/or Practice, Competencies, Curriculum Development, Early Childhood Education, Higher Education, In-service Teachers, Learning Approaches, Mixed-method Research, Pre-service Teachers, Primary Education, Qualitative Methods, Quantitative Methods, Secondary Education, Social Aspects of Learning and Teaching, Social Development, Social Sciences and Humanities, Teacher Effectiveness, Teacher Professional Development

**Interest group:** SIG 05 - Learning and Development in Early Childhood, SIG 11 - Teaching and Teacher Education, SIG 17 - Methods in Learning Research

**Chairperson:** Dagmar Derix, Netherlands

### Assessment of preservice teachers' professional vision of adaptive teaching

**Keywords:** Competencies, Higher Education, Pre-service Teachers, Teacher Professional Development

**Presenting Author:** Caroline Burgwald, Goethe-Universität Frankfurt, Germany; **Co-Author:** Ilonca Hardy, Goethe-Universität Frankfurt, Germany

Adaptive teaching refers to teachers' adjustment of instruction to students' individual needs, thus encompassing teachers' ability for implementing formative diagnostics and instructional support. The construct of professional vision, referring to teachers' ability to selectively identify classroom events that are significant for adaptive instructional practice (*noticing*) and to interpret those events as effective or ineffective for student learning (*knowledge-based reasoning*) may be used to measure respective individual differences. The present study aims at the development of a video-based instrument for capturing (preservice) teachers' professional vision of adaptive teaching, focusing on diagnostics and instructional support. It further aims at establishing evidence for the instrument's construct validity by means of modelling dimensionality. The instrument is based on the presentation of two short videos featuring different aspects of adaptive teaching in primary and secondary education, which are then rated with regard to diagnostic and supportive teaching activity on a total of 44 items on a four-point Likert-type scale. A sample of  $N=894$  preservice teachers took part in this study. Using structural equation modelling and respective model comparisons, a four-dimensional construct with the factors of diagnostic strategies and individualized support emerged, each specific to one video. The subscales showed moderate to good reliabilities, indicating that the measurement approach captures individual differences. In further analyses, student background characteristics and their individual beliefs and knowledge will be related to testing outcomes to allow for a distinct description of proficiency profiles in different groups of test takers.

### Teachers' Innovative Work Behavior, Self-efficacy, and Irrational Beliefs: A Cusp Catastrophe Model

**Keywords:** Attitudes and Beliefs, Primary Education, Quantitative Methods, Teacher Effectiveness

**Presenting Author:** Angelos Gkontelos, Aristotle University of Thessaloniki, Greece; **Co-Author:** Dimitrios Stamovlasis, Aristotle University of Thessaloniki, Greece

This study explores the effects of self-efficacy (SE) and irrational beliefs (IB) on teachers' innovative work behavior (IWB). Research has shown that SE has a positive association with IWB and IB are correlated negatively with IWB. The traditional linear models, however, have limited explanatory power and do not always provide consistent results. In this endeavor, potential nonlinear relationships were sought based on previous findings and theoretical considerations. Data taken from 964 primary education teachers and included measures of IWB, SE and IB. "Idea Realization" (IR), a dimension from the IWB, was used as the dependent measure as a function of self-efficacy and the "Demands for Justice" (DJ), a dimension of the irrational beliefs. Cusp catastrophe analysis showed that (SE) acts as the asymmetry factor and DJ as the bifurcation factor. The model suggests that beyond a threshold value of DJ, the changes in innovative work behavior is nonlinear, that is transitions for one behavioral mode to another are observed. The results show the applicability of catastrophe theory in this domain and support the complex dynamical systems perspective in educational research.

### Diversity in physics classes – effects of advanced teacher trainings under diversity aspects

**Keywords:** Higher Education, In-service Teachers, Secondary Education, Teacher Professional Development

**Presenting Author:** Ann-Katrin Krebs, University of Education Schwabisch Gmuend, Germany; **Co-Author:** Lutz Kasper, University of Education Schwabisch Gmünd, Germany

With diversity-orientated and gender-sensible contents the project aims for an increase in physics teacher students with a multi-dimensional approach. To identify working methods and contents in the field, the project acquired in-service STEM teachers to attend special designed teacher training workshops (TTWs) based on observation of current teachings in physics. Firstly, the PhD project addressed the pupils of the attending teachers and asked them with a paper survey about their motivational regulation, self-efficacy and self-determination in learning physics. Secondly, the PhD project focuses on the physics teachers with in-depth interviews after each TTW, to look into the effects of the TTWs. The presentation offers a deeper view into the following results.

The main results of the pupils' survey show that most of the pupils lose their interests in physics in secondary school during grade level 8 to level 10. Female pupils don't see the use of physics in their future job application or their studies. The results also indicate a gender bias from parents concerning the consequences of bad grades in physics. Male pupils answered significantly more agreeing than the females, that they get in trouble at home if they didn't get a good grade.

The qualitative study uses the theoretical background about the effects of teacher trainings on four levels by Lipowsky and Rzejak (2015). The main results show that teachers are very interested in practical teaching scenarios, which are addressing the heterogeneity of the students and which are easily applicable in their classes.

### Content and network analysis for exploring and evaluating pre-service teachers' epistemic beliefs

**Keywords:** Attitudes and Beliefs, Higher Education, Mixed-method Research, Pre-service Teachers

**Presenting Author:** Maria Gkevrrou, Aristotle University of Thessaloniki, Greece; **Co-Author:** Dimitrios Stamovlasis, Aristotle University of Thessaloniki, Greece

The objective of this study is twofold. Firstly, a methodological contribution is made by examining the applicability of software-aided content analysis of textual data that results to the formation of concept maps. These semantic representations reflect the underlying knowledge or belief systems and could be used for their qualitative appraisal. This approach can be implemented in conjunction to network analysis of data obtained via survey methods examining the same system. Secondly, specific research is illustrated demonstrating the applicability of the above triangulation methodology, in probing the scientific epistemological beliefs of pre-service teachers, students in the Social Sciences and Humanities. The textual data were students' essays elaborating philosophical questions and on the other hand, the quantitative data were derived from a self-report questionnaire on beliefs about the Nature of Science (NOS) and were explored via network analysis. The results of both approaches converged to the same general conclusions about the dominant dimensions of students' formed epistemology.

**Keywords:** epistemological beliefs, pre-service teachers, software-aided content analysis, network analysis

### Teachers' beliefs and practices on social-emotional (SE) learning and children's SE development

**Keywords:** Early Childhood Education, Social Aspects of Learning and Teaching, Social Development, Teacher Effectiveness

**Presenting Author:** Hong Zhuang, The Education University of Hong Kong, Hong Kong

This proposed study will explore the associations between teachers' beliefs and practices on social-emotional learning (SEL) and children's social-emotional development (SED) in Hong Kong and Shenzhen in China using quantitative data from the Classroom Assessment Scoring System (CLASS) and the Social Competence and Behavior Evaluation-30 (SCBE-30). Meanwhile, the qualitative data from focus-group interviews with 48 teachers and 24 preschool classroom observations can help understand how teachers' beliefs direct them to conduct teaching practices to support children's SEL in the authentic preschool setting. The anticipated results would help to understand the situation of SEL and children's SED in China. It would also indicate that high-quality SEL in practice is beneficial for children's SED, though children in different regions might not be able to experience the same quality SEL due to the different emphasis of early childhood education resulting from different social contexts in two cities. It enlightens that more efforts must be made to ensure all children get access to high-quality SEL so that these benefits can be realized, and how can different stakeholders take appropriate actions to facilitate SEL in China.

#### **Examining the Perceptions of Teachers and Students about Economics Education**

**Keywords:** Qualitative Methods, Secondary Education, Social Aspects of Learning and Teaching, Social Sciences and Humanities

**Presenting Author:** Jatupol Sangwanglao, The University of Hong Kong, China

The main objective of this study was to investigate the current perceptions of teachers and students regarding economics education in Thailand. An examination of the perceptions of both groups has not been found in the Thai context. Furthermore, no studies have examined teachers and students' perceptions of the field of economics education since the outbreak of the COVID-19. The framework used in this study was inspired by the original ideas of Oberrauch and Seeber (2022). To address the study objective, one-on-one online interviews were used to question the selected participants, which comprised 17 teachers and 15 students. Each interview lasted 35–60 minutes. The interview responses were then analysed thematically. The results of this study revealed very similar themes for both the teachers and students (e.g. the use of mathematics and graphs). However, for some of these themes, the students may have had limited background experience, which led to them offer shorter statements than the teachers. This study provides information regarding the current perceptions of teachers and students about economics education, especially in the Thai context. Teachers may reflect on the views expressed in this study, and such reflection may inspire them to make their lessons more meaningful. Moreover, the results of this study are expected to help policymakers to revise economics content to make future curricula more impactful. Reference Oberrauch, L., & Seeber, G. (2022). The impact of mandatory economic education on adolescents' attitudes. *Education Economics*, 30(2), 208–224. <https://doi.org/10.1080/09645292.2021.1967294>

#### **1st grade pupils experiences of their first year at primary school**

**Keywords:** Communities of Learners and/or Practice, Curriculum Development, Primary Education, Qualitative Methods

**Presenting Author:** Reidun Hoff-Jenssen, Ostfold University College, Norway

Starting school and being a pupil is a new phase in life for children. During 1<sup>st</sup> grade in primary school, pupils learn and encounter many new things. Entering primary school has been described as a period of considerable change (Einarsdóttir, 2003; Fabian, 2000), "a culture shock" (Broström, 2007, s. 61) and one of the major challenges children have to face in their early childhood years (Margetts, 2002). When children start school they encounter new environments, people and expectations (Murray & Harrison, 2005; Perry & Dockett, 2012, s. 7) and meet both academical and social challenges (Perry et al., 1998). This study is premised on a view of children as competent actors in their own lives and a belief that their voices should be heard. Through the research question *What do pupils consider as important to learn in 1st grade?* the aim of this study is to explore 1<sup>st</sup>-grade pupils' experiences and reflections on joining and being a part of the school society and becoming a school child. Becoming a school child involves interpreting information and constructing understandings about the school, taking on the behaviours and expectations of the new environment and the role as a pupil (Margetts, 2013, s. 80).

#### **Changes in facilitating learning about landforms in Norwegian curricula (grade 1-10) from 1974-2020**

**Keywords:** Curriculum Development, Learning Approaches, Primary Education, Qualitative Methods

**Presenting Author:** Rikke Lünell, Nord university, Norway

The research presented focuses on changes in facilitating learning about the topic *landforms* in Norwegian curricula (grade 1-10), 1974-2020. The aim is to identify and understand how facilitating students' learning about landforms have changed, and to analyze how this harmonizes with theories about learning and knowledge. The method applied is qualitative content analysis of five subsequent Norwegian curricula. Didactic elements (subject, content, goals and work methods) related to landforms were mapped and analyzed in view of five central pedagogical/philosophical thinkers (Bruner, Dewey, Klafki, Piaget). The results show that Vygotsky's view on learning as an interactive process to facilitate students' learning about landforms is pervasive in all the curricula. Content connected to landforms, with roots in myths and legends, corresponds well to Piaget's cognitive constructivist knowledge view. This aspect disappears in the two last curricula, and learning outcomes turn more scientific. In view of a general educative purpose, this change may be considered more economically beneficial, and can be in line with Klafki's theoretic objectivism. All curricula emphasize learning about landforms in the child's local area, which harmonizes with Dewey's pedagogical view. In the last curriculum, from 2020, basic principles about the geological cycle are introduced for the first time – an introduction in the spirit of Bruner. The conclusion is that over time, learning objectives about landforms have become fewer, but more science related. The development can be seen as a shift from the reform pedagogical tradition to a more controlled cognitive and constructivist sociocultural view of learning.

#### **Session F 7**

21 August 2023 15:30 - 17:00

UOM\_R05

Roundtable

Learning and Social Interaction, Teaching and Teacher Education

#### **Multicultural Education**

**Keywords:** Communication Skills, Dialogic Pedagogy, Early Childhood Education, Gender Issues, Higher Education, Migrant / Refugee and Minority students, Mixed-method Research, Multicultural Education, Primary Education, Teaching Approaches, Teaching/Instructional Strategies

**Interest group:** SIG 11 - Teaching and Teacher Education, SIG 21 - Learning and Teaching in Culturally Diverse Settings, SIG 26 - Argumentation, Dialogue and Reasoning

**Chairperson:** Mélodie Bourger-Bouveret, France

#### **Estonian Preschool and Primary Teachers' Preparedness and Experience to Teach Migrant Students**

**Keywords:** Early Childhood Education, Migrant / Refugee and Minority students, Multicultural Education, Primary Education

**Presenting Author:** Maiki Vanahans, Tallinn University, Estonia; **Co-Author:** Inge Timoštšuk, Tallinn University, Estonia; **Co-Author:** Krista Uibu, University of Tartu, Estonia

Teachers are expected to help newly arrived migrant students achieve high educational goals, which requires a high level of professional qualifications and awareness of the cultural diversity of the students. The inclusion of students into the learning process in a multicultural classroom depends on teachers' ability to understand and accept the cultural differences, language and interests of each student. The study aimed to find out Estonian preschool and primary teachers' understandings about their preparedness and experience to teach newly arrived migrant students. The data were gathered via semi-structured interviews from 14 preschool and primary teachers with newly arrived migrant students' teaching experience. The results indicate that nevertheless, teachers held positive views towards cultural diversity, teachers' knowledge of other cultures are rather superficial. Language barrier, newly arrived students with educational special needs and insufficient differentiation skills of teachers were reported as main challenges. Teacher education, therefore, needs to focus on teachers' general cultural knowledge, the practice of culturally responsive teaching, and the wider integration of inclusive practices with cultural diversity.

#### **Teachers' teaching approaches: Estonian and Russian preschool classrooms**

**Keywords:** Early Childhood Education, Multicultural Education, Teaching Approaches, Teaching/Instructional Strategies

**Presenting Author:** Piia Varik, Tallinn University, Institute of Educational Sciences, Estonia; **Co-Author:** Eve Kikas, University of Tallinn, institute of Psychology,

Estonia; **Co-Author:**Maire Tuul, Tallinn University, Institute of Educational Sciences, Estonia

Providing quality early education is essential for to ensure children to participate in lifelong learning, self-development and social integration. Current study highlight how Estonian preschool teachers evaluate their teaching approaches and how to they differ between teachers of Estonia and Russian groups. For several years the concept of teachers teaching approaches has become one of the most important topics in the educational field in teaching (Tuul 2017; Kimer et al. 2016; Lerkkanen et al. 2012; Rasku-Puttonen et al. 2011; Trossmann and Kikas 2011). Currently, the concept of teachers teaching approaches is mainly based on widely used framework by Stipek and Byler (2005). A review of the teaching approach literature reveals a significant theoretical shift away from didactic, teacher-directed approach to a child-centered approach in which the child creates meaning in their own learning (Tzuo et al. 2011). Present study was conducted with using quantitative method, online-survey with 954 preschool teachers. Interpretation of results on the given research were based on clustering.

#### **Using Epistemic Network Analysis to examine dialogic teaching for promoting cultural literacy**

**Keywords:** Communication Skills, Dialogic Pedagogy, Mixed-method Research, Multicultural Education

**Presenting Author:**Jose Luna, University of Barcelona, Spain

Cultural literacy (CL) is a dialogic practice aimed at developing competencies that facilitate co-existing in today's multicultural environments. A highly advocated pedagogy for learning CL is dialogic teaching. However, there are different understandings of dialogic teaching and, consequently, different coding frameworks. A problem with coding frameworks is that they do not allow the analysis of the temporal dimension of the data. In addition, most research on dialogue and CL is focused on analyzing only the dialogic process and not the learning content. Epistemic Network Analysis (ENA) might be a solution to overcome these difficulties. ENA is a software that allows researchers to analyze the temporal co-occurrences of utterances and the intensity of relationships between them; in terms of content and process. During the roundtable, I will discuss the existing challenges with analyzing classroom discussions and examine the potential of the ENA to address these challenges. The research question is: What are the advantages and disadvantages of ENA analysis used to evaluate the quality of discussion to promote CL? The data are from an intervention on dialogic teaching and CL with 50 Spanish high school students. I analyzed 10 discussions to reveal the advantages and limitations of this methodology.

#### **Addressing the white-dominant norm: decolonial explorations of Whiteness in Swedish Education.**

**Keywords:** Gender Issues, Higher Education, Multicultural Education, Teaching Approaches

**Presenting Author:**Asia Della Rosa, Jönköping University, Sweden

This paper outlines my doctoral thesis, which I have started in February 2022, and my aim is to present salient aspects of it, and to present these preliminary ideas for the purposes of receiving feedback from JURE participants working in the areas of learning and instruction generally and with issues of higher education and marginalization processes specifically. In my doctoral thesis, I am interested in investigating the ways in which whiteness is articulated and discussed in relation to other identity positions such as gender, race, disability, and class, within adult education in Sweden. Sweden constitutes a particularly interesting context in the light of two phenomena: the absence of the use of the word race, not only in common language but also in legislation(at least) since 2011, and a cultural understanding of Swedish people as color-blind.In this work, I plan to investigate the influences of whiteness – understood here as a concept as well as a phenomenon – in Swedish education, and in doing my doctoral project, as articulated now, includes two theoretical studies and two case studies. My interest is to further explore the possible implications in the field of education generally, and teacher education specifically. Here the interest lies in understanding how the issue of whiteness is addressed and discussed, prompting an urgent call for reflection on the power structures that frame, organise, and define education in theory and practice.

#### **Session F 8**

21 August 2023 15:30 - 17:00

UOM\_A05

Roundtable

Learning and Instructional Technology, Teaching and Teacher Education

#### **Collaborative Learning**

**Keywords:** At-risk Students, Cooperative/Collaborative Learning, Feedback, Higher Education, Secondary Education, Simulation-based Learning, Teacher Efficacy

**Interest group:** SIG 07 - Technology-Enhanced Learning And Instruction, SIG 18 - Educational Effectiveness and Improvement

**Chairperson:** Yuri Uesaka, The University of Tokyo, Japan

#### **Teacher collaboration fostering collective teacher efficacy in low and high performing schools**

**Keywords:** At-risk Students, Cooperative/Collaborative Learning, Secondary Education, Teacher Efficacy

**Presenting Author:**Heline Van Peteghem, Vrije Universiteit Brussel, Belgium; **Co-Author:**Ingeborg Placklé, Vrije Universiteit Brussel, Belgium; **Co-Author:**Machteld Vandecandelaere, KU LEUVEN, Belgium

The increasing complexity and diversity of the learning environment in prevocational education (Grades 7 – 8) creates an exceptionally challenging context for teachers to teach. To provide quality education for all students, a powerful learning environment (PLE) is needed. The teacher, and the school team, play a key role in developing PLEs, where teachers' beliefs about teaching and learning cannot be underestimated. Collective teacher efficacy (CTE), which refers to teachers' shared beliefs about their ability to influence student learning (Donohoo, 2018), is the number one influence in student achievement (Hattie, 2016). Therefore, the interest of researchers to foster CTE has been growing. Teacher collaboration appear to be a promising approach. However, there is still much that needs to be understood about how collaboration is supporting the development of CTE. The aim of this study is to investigate how teacher collaboration in low and high performing schools are contributing to CTE. The study is a multiple case study consisting of ten cases, based on extreme case sampling of student performances. Via a qualitative analysis, each case will be compared with one another to create more insights of successful collaboration fostering CTE. Since this study is still ongoing, we share only preliminary results and hypotheses. A roundtable session offers the opportunity to explore the preliminary results of this study.

#### **Automated Feedback and Learning Design for Collaborative Problem Solving in Simulation Scenarios**

**Keywords:** Cooperative/Collaborative Learning, Feedback, Higher Education, Simulation-based Learning

**Presenting Author:**Daniel Sanchez, University of Oslo, Norway; **Co-Author:**Rachelle Esterhazy, University of Oslo, Norway; **Co-Author:**Crina Damsa, University of Oslo, Norway

Despite the proliferation of automatic tools that aim to support collaborative learning, little is understood about how feedback generated by these tools is integrated in simulation-based learning design. This gap is critical as it pinpoints how different ways of combining learning design elements and automated feedback create opportunities for learners to collaborate and engage with knowledge in productive ways. This study uses a design-based research and participatory design approach in a high-fidelity simulation-based learning design in nursing education. The study seeks to identify how teachers initially conceive automated feedback as part of their learning design and how they gradually adjust both feedback and learning design in light of empirical evidence. It does so by taking a departure point in models based on research literature and by analysing multiple data sources: observations of simulations, records from co-design meetings, usability testing, user experience (UX) review, and teacher interviews. Findings from these analyses will feed into future developments of automated feedback in collaborative settings.

#### **Session F 9**

21 August 2023 15:30 - 17:00

UOM\_R03

Poster Presentation

Higher Education, Learning and Instructional Technology, Learning and Social Interaction, Motivational, Social and Affective Processes

### **Well-being and Social Aspects of Learning**

**Keywords:** At-risk Students, Early Childhood Education, Educational Policy, Educational Technologies, Emotion and Affect, Engagement, Goal Orientations, Health-care Education, Higher Education, Mixed-method Research, Motivation, Quantitative Methods, Resilience, Self-concept, Self-regulated Learning and Behaviour, Social Aspects of Learning and Teaching, Social Interaction, Well-being

**Interest group:** SIG 04 - Higher Education, SIG 05 - Learning and Development in Early Childhood, SIG 08 - Motivation and Emotion, SIG 16 - Metacognition and Self-Regulated Learning

**Chairperson:** Charleen Brand, Ruhr University Bochum, Institute of Educational Research, Germany

### **Healthy Cafeterias at the Complutense University of Madrid: Procope Project**

**Keywords:** Educational Policy, Higher Education, Mixed-method Research, Well-being

**Presenting Author:** Cristina Orío-Aparicio, Universidad Complutense de Madrid, Spain; **Presenting Author:** Sandra Gómez del Pulgar Cinque, Universidad Complutense de Madrid, Spain; **Presenting Author:** Adrián Jesús López Sánchez, Universidad Complutense de Madrid, Spain; **Co-Author:** Lydia Serrano Gregorio, Universidad Complutense de Madrid, Spain

The "Procope Project" contemplates university cafeterias as potentially educational spaces. Therefore, students' perception of the cafeteria, the nutritional value of the products offered and eating habits were studied. In this research a mixed methodology was used, applying a questionnaire and interviews designed both ad-hoc. Preliminary data show consistent results in both instruments. A total of 3441 students from the Complutense University of Madrid (UCM) of the majority of the faculties participated in the study. Different analyses were carried out in order to identify possible needs about a type of categories identified by Atlas-ti in the case of interviews (products offered, spaces, prices, usefulness, stuff, and adequacy of menus) and other statistical data conducted by SPSS related to the questionnaire results (reliability, validation, descriptives, differential, correlational, among others). These data allow us to know in depth the educational potential of the cafeterias, and we expect to facilitate policy-making in their management in order to create higher quality learning and social environments.

### **The top predictors of students' life satisfaction: A cross-cultural study in 71 countries**

**Keywords:** Emotion and Affect, Motivation, Resilience, Well-being

**Presenting Author:** Ronnel Bornasal King, The Chinese University of Hong Kong, Hong Kong; **Co-Author:** Yi Wang, The University of Macau, Macao; **Co-Author:** Lingyi Fu, The University of Macau, Macao; **Co-Author:** Shing On Leung, The University of Macau, Macao

The objective of this study is to examine the key factors that predict students' life satisfaction. Data ( $N = 522,836$ ) from 15-year-old students from 71 countries were extracted from the latest cycle of the Programme for International Student Assessment (PISA) 2018. The light gradient boosting machine (LightGBM) algorithm was used to examine the roles of individual, microsystem, mesosystem, and exosystem factors in predicting life satisfaction. Across the 71 countries, results indicated that life satisfaction was predicted by the following: eudaimonia, school belonging, parental support, general fear of goal, and GDP per capita. We also undertook an analysis across eight world cultures and found slight differences from the overall results. These key factors provide insights for policymakers to better understand students' life satisfaction and design accurate educational interventions.

### **New Space for the School. The Environmental-Psychological Significance of the Learning Environment**

**Keywords:** Motivation, Quantitative Methods, Social Interaction, Well-being

**Presenting Author:** Michelle Laux, PH Freiburg, Germany

*New findings in learning research as well as changing societal demands placed on schools (e.g. digitalisation, inclusion, full-time day schools) call for new spatial concepts and lead to an increasing research interest in this regard. However, especially in the field of educational research, there is a lack of empirical studies that focus on the influence of space on relevant learning-teaching variables.*

*The PhD project presented below aims at quantitatively investigating the environmental-psychological significance of the learning environment on the wellbeing of students and teachers. Based on a country comparison between Germany and the Netherlands, the question will be investigated to what extent school buildings as learning, teaching and social spaces fulfil their current and future tasks and how this influences the attitude towards the school as such of their users.*

*In detail, various aspects of physical, aesthetic and typological factors will be examined and the findings gained from this will provide a contribution to a holistic approach of school design. Serving as an important basis for a newly to be developed theoretical model, the results will provide important insights, both with regard to the planning of new buildings and for the evaluation and, if necessary, follow-up control of existing school buildings.*

### **Predicting academic and psychological help seeking intentions among university students**

**Keywords:** Emotion and Affect, Higher Education, Self-regulated Learning and Behaviour, Well-being

**Presenting Author:** Meropi Simou, Aristotle University of Thessaloniki, Greece; **Co-Author:** Eleftheria Gonida, Aristotle University of Thessaloniki, Greece

Although seeking help is considered as an important developmental skill for a person's adjustment, the majority of students hesitate or avoid seeking help when they need it. The present study attempts a preliminary co-examination of undergraduate students' help-seeking intention when faced with academic and psychological difficulties. One hundred undergraduate students completed a series of self-report measures assessing the following: history of academic and/or psychological difficulties, study-related emotions, emotion regulation and self-regulation strategies, help-seeking beliefs (perceived benefit and cost/threat), perceived behavioral control, help-seeking intention and avoidance for academic and psychological issues. Data analyses showed that help-seeking intention was positively correlated with positive beliefs/perceived benefits of help seeking, whereas avoidance was mainly positively correlated with perceived costs, both self- and social stigma of help-seeking, for both academic and psychological issues. Perceived behavioral control and self-efficacy were both positively correlated with help-seeking intention, whereas difficulty in decision making was positively correlated with help-seeking avoidance for both academic and psychological issues. Positive emotions were positively correlated with both academic and psychological help-seeking intention, whereas negative emotions and difficulties in emotion regulation were positively correlated with academic help-seeking avoidance. These preliminary data will be discussed in light of current theory and evidence and possible implications for practice will be pointed out.

### **The impact of grade retention and school retention on Portuguese students' psychosocial outcomes**

**Keywords:** At-risk Students, Engagement, Goal Orientations, Self-concept

**Presenting Author:** Joana Pipa, ISPA - Instituto Universitário | Center for Research in Education, Portugal; **Co-Author:** Francisco Peixoto, ISPA - Instituto Universitário | Center for Research in Education, Portugal

Grade retention is still a widely debated practice, in particular, due to the findings related to its effects. Studies investigating the psychosocial effects of grade retention are, nevertheless, less common and inconclusive. In addition, the majority of studies tend to neglect the importance of the school context in shaping students' feelings and experiences. This study investigates the relationship between grade retention in grades 1-9 and the psychosocial outcomes of fifteen-year-old Portuguese students. In addition, we explore the moderating effect of school retention composition. Using a quasi-experimental design, we reduced the bias between 1362 retained and 4189 non-retained students in several relevant background variables. Results from the multilevel models showed that ever-retained students by the age of 15 presented lower levels of task orientation and sense of school belonging. Moreover, we found that school retention composition moderates the relationship between individual retention and the psychosocial variables assessed. Overall, these findings suggest detrimental effects of grade retention in motivational aspects, and it reveals that grade retention does not only affect retained students but also has an impact on their non-retained peers.

### **Investigating the longitudinal effects of student—teacher conflict and externalising behaviour**

**Keywords:** Emotion and Affect, Quantitative Methods, Social Aspects of Learning and Teaching, Social Interaction

**Presenting Author:** Mirna Sumatic, University of Oxford, United Kingdom

The student-teacher relationship is often characterised as being either warm or conflictual, with both markers of the relationship having important effects on children's outcomes, both academic and non-academic. However, conflict specifically is an important aspect often associated with problem behaviour. The present study aimed to observe the association between conflict in the student-teacher relationship and externalising behaviour, as rated by children and teachers, across time. Using a sample of Finnish children from grades 4, 6, 7 and 9, a cross-lagged model was tested on the data to observe the longitudinal trends. The model demonstrated that conflict and externalising behaviour were stable across the four time points, and each prior time point significantly predicted the following. However, prior conflict was not found to predict subsequent externalising behaviour, but teacher-rated externalising behaviour in grades 4 and 6 predicted subsequent child-rated externalising behaviour and teacher-rated externalising behaviour in grade 6 predicted conflict in grade 7. These findings suggest that conflict and externalising behaviour are stable across the transition phase from primary to early secondary, however, direct associations between externalising behaviour and conflict are not evident at every grade level.

#### **Keeping Children Healthy During “Uncertain Times” In Kindergarten Context: A Heuristic Model**

**Keywords:** Early Childhood Education, Educational Technologies, Health-care Education, Well-being

**Presenting Author:** Elaine Lam, The Education University of Hong Kong, Hong Kong; **Presenting Author:** James Ko, The Education University of Hong Kong, Hong Kong; **Co-Author:** Jin Sun, The Education University of Hong Kong, Hong Kong

Schools are expected to support children's development with appropriate physical activities and health needs (Click et al., 2014). However, school closures to control the infection risk have greatly influenced children's health and well-being since the COVID-19 outbreak (UNICEF, 2020). In contrast, insufficient physical activities and obesity are the common adverse impacts widely discussed among scholars responding to those side effects of the policy regulations for the pandemic (Gupta & Jawanda, 2020). This paper introduces a new “CONSEPT” model, combining two major frameworks which are commonly used for promoting physical education in schools and technology integration: The social-ecological model (SEM) and the TPACK model, to address the impacts on children's health-related issues during the COVID outbreak. Examples corresponding to the model are illustrated to show how teachers can plan physical education activities in the kindergarten context with e-tools during the COVID outbreak. The limitations and the potential risks of using the CONSEPT model are discussed at the end.

#### **Keynote 1**

21 August 2023 17:15 - 18:15

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JURE 2023 Keynote

#### **Well-being in School: How to make well-being an integral part of school life?**

**Keywords:** Educational Policy, Resilience, School Effectiveness, Well-being

**Interest group:**

**Chairperson:** Dimitrios Moustakas, Aristotle University of Thessaloniki, Greece

Well-being in schools is emerging as a powerful tool to promote students' academic as well as emotional and social competences, and an essential part of education policy in many countries. In the context of the life-changing events, such as the coronavirus pandemic, the skills of well-being and resilience can serve as a lifebuoy for coping with challenging experiences. Student well-being can be considered as a resource for facilitating positive learning outcomes and as a protective factor in coping with difficulties in school, but also as an outcome of successful learning and school experiences. It is however important not to view well-being separately from other aspects of school, but as an integral part of school life and curriculum. Promoting well-being in school benefits all members of the school community. Cultivating a psychologically and physically safe school environment that contributes to well-being of different school stakeholders can bring about a critical shift in the role of schools from academic institutions that focus on transferring knowledge and skills to institutions that meet a wide range of needs in different areas of life through socio-emotional and academic learning. The keynote will address the topic of well-being and resilience in schools and discuss how well-being can become the general way of life at school.

#### **Well-being in School: How to make well-being an integral part of school life?**

**Presenting Author:** Julia Morinaj, University of Bern, Switzerland

Well-being in schools is emerging as a powerful tool to promote students' academic as well as emotional and social competences, and an essential part of education policy in many countries. In the context of the life-changing events, such as the coronavirus pandemic, the skills of well-being and resilience can serve as a lifebuoy for coping with challenging experiences. Student well-being can be considered as a resource for facilitating positive learning outcomes and as a protective factor in coping with difficulties in school, but also as an outcome of successful learning and school experiences. It is however important not to view well-being separately from other aspects of school, but as an integral part of school life and curriculum. Promoting well-being in school benefits all members of the school community. Cultivating a psychologically and physically safe school environment that contributes to well-being of different school stakeholders can bring about a critical shift in the role of schools from academic institutions that focus on transferring knowledge and skills to institutions that meet a wide range of needs in different areas of life through socio-emotional and academic learning. The keynote will address the topic of well-being and resilience in schools and discuss how well-being can become the general way of life at school.