

## Session A 1

18 August 2021 10:15 - 11:15

Session Room 9

Single Paper

Assessment and Evaluation, Cognitive Science, Higher Education

### Best of JURE Paper Session

**Keywords:** Assessment Methods and Tools, Comprehension of Text and Graphics, Computer-assisted Learning, Early Childhood Education, Educational Psychology, Educational Technology, Numeracy, Pre-service Teacher Education, Primary Education, Psychometrics, Reading Comprehension, Writing/Literacy  
**Interest group:** SIG 02 - Comprehension of Text and Graphics, SIG 04 - Higher Education, SIG 15 - Special Educational Needs

**Chairperson:** Prajakt Pande, Denmark

### Developing and Validating Preschoolers' Early Numeracy Teacher Rating Scale (TRS-EN)

**Keywords:** Assessment Methods and Tools, Early Childhood Education, Numeracy, Psychometrics

**Presenting Author:** Terhi Vessonen, University of Helsinki, Finland; **Co-Author:** Anna Widlund, Åbo Akademi University, Finland; **Co-Author:** Airi Hakkarainen, University of Helsinki, Finland; **Co-Author:** Pirjo Aunio, University of Helsinki, Finland

The aim of this study was to develop and validate a teacher rating scale for assessing 3- and 4-year-old children's early numeracy. Fifty-six preschool teachers assessed children's (3-year-olds  $n = 127$ ; 4-year-olds  $n = 146$ ) numerical relational, counting and basic arithmetic skills using TRS-EN, which was developed in a group of specialists. Construct validity evidence through confirmatory factor analysis supported one- and three-factor (numerical relational, counting, basic arithmetic) models for both age groups. TRS-EN also demonstrated excellent internal consistency in both age groups. A standardized early numeracy measure was used to establish criterion-related validity. TRS-EN scores corresponded well with the direct early numeracy measure and predicted children's later early numeracy skills. The results indicate adequate psychometric properties for TRS-EN and demonstrates its value for assisting teachers to assess core early numeracy skills and identify children with lower core early numeracy skills (i.e., at risk for mathematical learning difficulties).

### Stimulating Inference-making When Reading and Listening to Narrative Texts

**Keywords:** Comprehension of Text and Graphics, Educational Psychology, Primary Education, Reading Comprehension

**Presenting Author:** Brechtje van Zuijls, Erasmus University Rotterdam, Netherlands; **Co-Author:** Lesya Ganushchak, Erasmus University Rotterdam, Netherlands; **Co-Author:** Huib Tabbers, Erasmus University Rotterdam, Netherlands

Many primary school children struggle with reading comprehension. A central element of reading comprehension is the ability to draw inferences, which is especially challenging for beginning readers. Inference-making involves identifying implicit relations between parts of the text, and between text and background knowledge. Allocation of cognitive resources to text decoding may prevent beginning readers from successful inference-making and therefore compromise comprehension. The present study evaluated whether stimulating inference-making in a listening context is more effective and less cognitively demanding for beginning readers compared to a reading context. In two experiments, inference-making was stimulated in a sample of second grade children, by asking them inferential questions during reading and during listening. A 2x2 within-subjects design was used with modality (reading vs. listening) and inference-stimulation (questioning vs. no questioning) as independent variables, and comprehension outcomes and cognitive load as dependent variables. Contrary to our expectations, Experiment 1 showed no differences between modalities in terms of comprehension outcomes and cognitive load. This may be explained by the above-average decoding skills of the participants in the sample. As the texts were relatively easy for the children, there was no need for them to invest a lot of cognitive resources in text decoding. Therefore, Experiment 2 was conducted with a slightly younger sample of children. The results showed that, as expected, reading imposed higher cognitive load compared to listening. However, this did not result in lower comprehension outcomes in the reading conditions. Moreover, stimulating inference-making increased cognitive load, but again this did not result in lower comprehension outcomes in the reading conditions. The lack of an effect of inference-stimulation on comprehension outcomes may be related to how comprehension was measured. A third follow-up experiment will be conducted with a free-recall protocol, instead of open-ended comprehension questions, to measure comprehension outcomes.

### Promoting student teachers' writing skills by automated feedback and self-assessment

**Keywords:** Computer-assisted Learning, Educational Technology, Pre-service Teacher Education, Writing/Literacy

**Presenting Author:** Veronika Barkela, Universität Koblenz-Landau, Germany; **Co-Author:** Miriam Leuchter, University of Koblenz - Landau, Germany

University students often do not have adequate academic writing skills. Hence, we developed an intelligent tutoring system (ITS) for German student teachers to promote their writing skills, measured based on text quality. Writing skills can be promoted by inviting students to summarize text, providing students with elaborate formative feedback, and initiating self-assessment through prompts. Therefore, we investigated the impact of automated feedback and self-assessment on the text quality of student teachers' summaries. A summary is a shortened, concise version of a text comprising the key aspects and necessary information for understanding. Moreover, the inclusion of irrelevant and redundant parts must be avoided. However, inexperienced writers face problems concisely presenting the core content in their own words and avoiding redundancies when writing a summary. Therefore, they might benefit from feedback and prompts addressing those problems. Automated formative feedback on writing assignments can be beneficial when it refers to learning goals and advancement and suggests possibilities for improvement. Prompts can be effective because they elicit focused self-assessment and stimulate reflection on writing skills. We collected data from 274 participants who each summarized six scientific texts. Using linear growth curve modeling, we statistically tested whether text quality increased when the students were provided with automated feedback and prompts for self-assessment. We found that text quality increased most when automated feedback was provided rather than when self-assessment was prompted or when a combination of automated feedback and self-assessment was used. The amount of feedback requests affected text quality. We concluded that students' writing skills can be promoted with an ITS providing automated feedback, however prompts should be revised to better meet students' needs.

## Session A 2

18 August 2021 10:15 - 11:15

Session Room 1

Single Paper

Learning and Instructional Technology, Learning and Social Interaction, Teaching and Teacher Education

### Mathematics

**Keywords:** Achievement, Comparative Studies, Learning Approaches, Mathematics, Metacognition, Phenomenography, Qualitative Methods, Secondary Education, Teaching/Instruction

**Interest group:** SIG 09 - Phenomenography and Variation Theory, SIG 12 - Writing, SIG 16 - Metacognition

**Chairperson:** Funda Kelahmetoğlu Tunçer, Middle East Technical University, Turkey

### Mathematics Teachers' Perceived Levels of Metacognition and Students' Achievement in Mathematics

**Keywords:** Achievement, Mathematics, Metacognition, Secondary Education

**Presenting Author:** Ruth Wafubwa, University of Szeged, Kenya

The present study investigated mathematics teachers' perceptions of metacognitive awareness and how their perceptions relate to students' performance in mathematics. The study sample consisted of 213 Kenyan secondary school teachers. A descriptive survey design was used and data collected through questionnaires. Results from descriptive statistics showed that teachers had a high perception of their levels of metacognitive awareness although the mean for metacognitive knowledge was higher than the mean for metacognitive skills. The T-test and ANOVA results did not show any significant effect of the teachers'

perceptions on gender, academic qualification, and years of teaching experience. Correlation analysis revealed a non-significant relationship between teachers' perceptions of metacognition and students' average performance in mathematics. This study revealed the need for teachers to understand the role of metacognition in learning and how they can model metacognitive strategies to the learners.

#### **Lecture Note-taking Factor Analyses: Japanese and Chinese Students' Math Class Strategies**

**Keywords:** Comparative Studies, Learning Approaches, Mathematics, Teaching/Instruction

**Presenting Author:** Mengsi Liu, The University of Tokyo, Japan

The present study explored effective lecture note-taking strategies and examined the effects of students' learning beliefs, learning motivation, and teachers' instructions. A questionnaire survey was conducted among high school students in Japan ( $n = 340$ ) and in China ( $n = 410$ ), and a multigroup structural equation modeling (SEM) analysis was performed. First, the Japanese and Chinese group comparison analysis of lecture note-taking showed no significant difference in the use of "shallow lecture note-taking," such as merely transcribing the presented content without thinking. However, the Chinese group was significantly more likely to use "deep lecture note-taking," such as writing down newly learned information or checking their understanding status during class. For the SEM analysis, both the Japanese and Chinese groups showed that students' learning motivation and teachers' instructions influenced lecture note-taking mediated by their learning beliefs. On the other hand, the model resulting from the analysis showed heterogeneity between the Japanese and Chinese groups. This indicated that the teachers' strategic instructions affected students' use of deep and shallow lecture note-taking in the Chinese group, while it encouraged students' use of shallow lecture note-taking only in the Japanese group. This study is the first to investigate lecture note-taking as a self-regulated skill to be cultivated, which is an aspect that has been overlooked in past studies. These results suggest that further exploration of teachers' strategic instructions in school settings is needed to refine students' lecture note-taking in both Japan and China.

#### **Teaching subtraction bridging through ten: different learning possibilities for pupils in grade 1**

**Keywords:** Mathematics, Phenomenography, Qualitative Methods, Teaching/Instruction

**Presenting Author:** Maria Nord, University of Gothenburg, University of Borås, Sweden

Research on pupils' development of early arithmetic is extensive. Single-unit counting is, in research, seen as an early strategy and strategies that entail part-whole relations as later and more effective (Fuson, 1992). We know less about how subtraction *is taught* in classrooms and *which learning possibilities teaching provide*. In this study, we analyse, on a fine-grained level, what aspects of the topic are offered to experience for pupils in two lessons where subtraction bridging through ten are taught. Variation theory of learning (Marton, 2015) is used as the theoretical framework. The aim of this paper is to describe the different learning possibilities provided in two lessons teaching the same content. The research question is thus: What possibilities for learning subtraction bridging through ten are offered during the lessons? Two video recorded grade 1 lessons, from a larger project, were chosen due to similarities in tasks as well as the teachers' use of pupils' ways of reasoning. Differences between offered possibilities to learn are focused in the result. Lesson A provided the pupils possibility to see *three ways of solving subtraction bridging through ten*. All ways were seen as legitimate, including single-unit counting, and changes into more effective ways were not promoted. Lesson B offered *three ways of solving subtraction tasks using 10 as a benchmark* while seeing numbers as composed units. Pupils were promoted to try two of the ways themselves. The result shows that pupils were offered different possibilities to learn subtraction bridging through 10: *how* teachers used representations and pupils' ways of seeing subtraction provided different possibilities in the two classrooms. In lesson B pupils using single unit counting were offered more possibilities to see numbers as composed units. Pupils, who already had developed this skill were also posed to challenges: when seeing subtraction as part-whole relations for pupils to develop facile structure numbers and experience subtraction. **Keywords:** teaching, subtraction, Variation Theory, grade 1

#### **Session A 3**

18 August 2021 10:15 - 11:15

Session Room 10

Single Paper

Learning and Social Interaction, Learning and Special Education, Motivational, Social and Affective Processes

#### **Special Educational Needs**

**Keywords:** At-risk Students, Developmental Processes, Early Childhood Education, Educational Psychology, Experimental Studies, Language (L1/Standard Language), Mathematics, Numeracy, Qualitative Methods, Social Aspects of Learning and Teaching

**Interest group:** SIG 15 - Special Educational Needs

**Chairperson:** Agnes Cichy, University of Regensburg, Germany

#### **Evaluating Ability Grouping's Potential to Reduce Gifted Students' Academic Boredom**

**Keywords:** Developmental Processes, Educational Psychology, Language (L1/Standard Language), Mathematics

**Presenting Author:** Markus Feuchter, University of Trier, Germany; **Co-Author:** Franzis Preckel, University of Trier, Germany

Ability grouping provides an advanced learning environment for gifted students, possibly buffering them from common long-term increases in academic boredom. We present a 3.5-year longitudinal investigation, spanning four waves of measurement (T1-T4), featuring secondary school students (grades 5 through 8) from five different German schools with full-time ability grouping ( $N = 1,861$ , 55.4% male). We used propensity score matching and latent growth curve modeling to determine the effects of class type on three types of boredom (intensity of boredom, boredom due to underchallenge, boredom due to overchallenge) in two subject domains (mathematics and German). We separated the effects of intervention effectiveness and efficacy, analyzing full and matched sample data. All types of boredom increased over time in both subjects. Ability grouping significantly reduced the intensity of boredom in mathematics in special classes for the gifted ( $\beta_{\text{effectiveness}} = -.158$ ,  $\beta_{\text{efficacy}} = -.206$ ), but had no further effects on the development of subject-specific academic boredom.

#### **The Effect of Individual and Situational Factors on Teachers' Justice Ratings of Class Situations**

**Keywords:** Educational Psychology, Experimental Studies, Qualitative Methods, Social Aspects of Learning and Teaching

**Presenting Author:** Scarlett Madeline Kobs, Humboldt Universität zu Berlin, Germany; **Co-Author:** Michel Knigge, Humboldt Universität zu Berlin, Germany;

**Co-Author:** Antje Ehlert, University of Potsdam / University of Johannesburg, Germany; **Co-Author:** Jenny Lenkeit, University of Potsdam, Germany; **Co-**

**Author:** Anne Hartmann, University of Potsdam, Germany; **Co-Author:** Nadine Spörer, University of Potsdam, Germany

Schools - as one of the most important institutions in the education system - have a profound influence on students' perceptions of justice in our society. In their role as school representatives' teachers' actions considerably shape these perceptions (Gorard, Smith, Greger, & Meuret, 2010). With the ongoing development towards inclusive education, questions concerning the compatibility of inclusion and justice in school arise. How teachers assess justice in inclusive learning settings has hardly been investigated. Accordingly, this paper aims to address this research gap using an experimental design to investigate the relationship of individual teacher characteristics as well as situational factors and the justice ratings of hypothetical student-teacher interactions. Teachers participating in a state-wide project in Brandenburg (Germany) were asked to rate randomized versions of two text vignettes describing student-teacher interactions. The text vignettes focused on the perceived fairness of resource allocation or the quality of treatment. Research on teachers' attitudes towards inclusion points to negative attitudes of teachers towards students with behavioral problems and learning difficulties (Avramidis & Norwich, 2002). Student descriptions matching these special educational needs (SEN) were used as manipulations alongside a neutral description of the student to investigate their possible influence on justice ratings. In addition, data on teachers' attitudes towards inclusion and experiences with persons with disabilities were collected. Analyses using linear mixed effect models point to a negative effect of the SEN on justice ratings, meaning situations in which the interacting student is described with a SEN are rated less just compared to the control condition. Furthermore, the results point to a connection of experiences with persons with disabilities and justice ratings. For example, teachers with disabled family members assessed the described interactions less just than their colleagues. Additionally, teachers with more positive attitudes towards inclusion rated the vignettes less just.

### **A combined numerical relational and motor skill intervention to improve preschoolers' early numeracy**

**Keywords:** At-risk Students, Early Childhood Education, Experimental Studies, Numeracy

**Presenting Author:**Pinja Jylänki, University of Helsinki, Finland; **Co-Author:**Elina Sipilä, University of Helsinki, Finland; **Co-Author:**Theo Mbay, 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

Previous research has shown that numerical relational skills plays a central role in the development of early numeracy (EN; Toll & Van Luit, 2014). In addition, fundamental motor skills (FMS) have been associated with EN in preschool aged children, but causal relations between FMS and EN have not been investigated (Gashaj et al., 2019). Previous EN interventions have been found effective, but lasting long-term learning effects have seldom been found or reported (Aunio, 2019), suggesting that more efficient approaches are needed to support children with low performance. Based on studies from EN and FMS fields we may assume that combining numerical relational skills and FMS in an intervention produces long-term learning effects. Hence, the aim of this study was to examine the immediate and long-term effects of an intervention program combining numerical relational skills and FMS practice, to improve EN. Eighteen preschoolers, identified as at risk in EN learning by their teachers, participated in the intervention. We applied a quasi-experimental design with two baseline and two post-test measurement points. Children's EN and FMS were measured in all measurement points and in analysis a within-subject repeated-measures design was applied. During the 8-week intervention, storybooks with rich mathematical language expressing numerical relational skills were read using dialogic reading techniques followed by FMS practices, that included the same mathematical concepts as the books. During baseline and the intervention children's EN improved significantly. However, when comparing gains per month, the gain in EN was significantly greater during the intervention ( $p = .003$ ), suggesting that the 8 week intervention was more effective than the 5 to 10 months baseline. The results showed that the intervention effects were maintained in the delayed post-test 8 weeks after the intervention.

#### **Session A 4**

18 August 2021 10:15 - 11:15

Session Room 8

Single Paper

Culture, Morality, Religion and Education, Instructional Design, Learning and Social Interaction

#### **Citizenship and Multicultural Education**

**Keywords:** Citizenship Education, Cognitive Skills, Content Analysis, Culture, History, Learning Approaches, Literacy, Multicultural Education, Out-of-School Learning, Qualitative Methods, Secondary Education

**Interest group:** SIG 21 - Learning and Teaching in Culturally Diverse Settings, SIG 26 - Argumentation, Dialogue and Reasoning

**Chairperson:** Belinda Merkle, University of Mannheim, Germany

#### **Initiators' perception of community education's purposes**

**Keywords:** Culture, Multicultural Education, Out-of-School Learning, Qualitative Methods

**Presenting Author:**Julia Steenwegen, University of Antwerp, Belgium; **Co-Author:**Noel Clycq, University of Antwerp, Belgium; **Co-Author:**Jan Vanhoof, University of Antwerp, Belgium

Community education is a versatile way for minoritized communities to organize education in support of their youth. To understand workings of such spaces we need to look closely at the purposes they seek to meet. By interviewing initiators from a variety of communities we study the purposes and motivations of different after-hours community schools. We add to the literature by offering an overview of cases in Flanders, a context characterized by a high educational inequality. We outline similarities across communities and our findings show that though the purposes often overlap the motivations differ significantly. These findings add to our knowledge of minoritized communities' educational needs and can be crucial when seeking fitting ways to support minoritized youth.

#### **Pedagogy and Democratic Vision in Israel's Democratic Schools**

**Keywords:** Citizenship Education, Content Analysis, Learning Approaches, Literacy

**Presenting Author:**Yifat Filo, Tel Aviv University, Israel; **Co-Author:**Benzi Slakmon, Tel Aviv University, Israel

Thirty-four years after the establishment of the first democratic school in Israel in 1987, the democratic school movement in Israel has flourished. Yet, its underlying pedagogy has not been sufficiently researched. The current study is an examination of the pedagogy and the didactics of Israeli democratic education in an attempt to understand its characteristics. How do classes differ in democratic schools when compared to others? What are democratic teaching and learning? What constitutes a democratic curriculum and what differentiates it from non-democratic curricula? In essence, what are the democratic elements evident in democratic Israeli pedagogy? An in-depth review of relevant literature and content analysis reveal that writings about democratic education in Israel expose the main perceptions and cultural-political mindset that typifies this form of education but lack the didactics and practical means to transform the democratic vision into a complete pedagogy. Democratic education is founded on a legal aspiration—not a pedagogical approach, it relies on negative freedom, and refrains from defining itself in a positive way. The dialogue inherent in democratic education is ontological, one that does not promote knowledge building practices. It is argued that Israeli democratic education belongs to a tradition of civic liberal education that is derived from liberal democracy, currently undergoing a global crisis. The worldwide retreat from liberalism is progressing concurrently to the development of new democratic theories that may provide insights to the field of democratic education in Israel. *Keywords:* democratic pedagogy, democratic education, democratic schools, Israel, dialogic education

#### **Students evaluating the trustworthiness of historical sources and internet sources: a comparison.**

**Keywords:** Citizenship Education, Cognitive Skills, History, Secondary Education

**Presenting Author:**Maartje van der Eem, University of Amsterdam, Netherlands; **Co-Author:**Marlieke Smelt, University of Amsterdam, Netherlands; **Co-Author:**Jannet Van Drie, University of Amsterdam, Netherlands; **Co-Author:**Saskia Brand-Gruwel, Hogeschool Zuyd, Netherlands; **Co-Author:**Carla Van Boxtel, University of Amsterdam, Netherlands

In our digitalized and democratic society, there is concern about the difficulties adolescents have with evaluating the trustworthiness of the enormous amount of information they encounter daily. In history education evaluating the trustworthiness of sources in relation to a particular question about the past is part of the curriculum in many countries. However, research shows that it can be a difficult skill to master and that students do not spontaneously apply this skill. This holds for history education as well as other domains, such as information found on the internet. Since this domain-specific historical skill shows overlap with the procedures that have to be used when evaluating information found on the internet, this study was conducted in order to gain a better understanding of how students evaluate the trustworthiness of both historical and (non-historical) internet sources. Grade 9 students from six Dutch secondary schools participated ( $N=112$ ). Students performed short open-ended tasks requiring them to evaluate the trustworthiness of historical and internet sources and to write down which criteria of trustworthiness they knew (procedural knowledge). Students also filled out questionnaires on task value. Results showed no major differences, but predominantly similarities between the outcomes of historical tasks and internet tasks: (1) a similar low average score for both tasks, (2) in both tasks, students applied more correct criteria than they mentioned in the procedural knowledge question, and (3) students were moderately positive about the usefulness and importance of learning to apply the skill on both historical and on internet sources, however, they were less positive about their interest in learning it. When teaching students how to evaluate the trustworthiness of sources, attention has to be paid to making students' implicit knowledge explicit and to design lessons and tasks in such a way that learning this skill becomes more interesting for students.

#### **Session A 5**

18 August 2021 10:15 - 11:15

Session Room 7

Single Paper

Culture, Morality, Religion and Education, Learning and Social Interaction, Motivational, Social and Affective Processes

### **Social Aspects of Learning and Teaching**

**Keywords:** Assessment Methods and Tools, Attitudes and Beliefs, Cultural Diversity in School, Learning Approaches, Primary Education, Quantitative Methods, Secondary Education, Social Aspects of Learning and Teaching, Social Interaction

**Interest group:** SIG 10 - Social Interaction in Learning and Instruction, SIG 21 - Learning and Teaching in Culturally Diverse Settings, SIG 25 - Educational Theory

**Chairperson:** ANASTASIA SKARPETI, NTNU - Norwegian University of Science and Technology, Norway

### **Students' Explicit and Implicit Interethnic Attitudes and Classroom Cohesion and Peer Acceptance**

**Keywords:** Attitudes and Beliefs, Cultural Diversity in School, Secondary Education, Social Aspects of Learning and Teaching

**Presenting Author:**Lian van Vemde, Utrecht University, Netherlands; **Co-Author:**Lisette Hornstra, Utrecht University, Netherlands; **Co-Author:**Jochem Thijs, University Utrecht, Netherlands

Positive relationships are conducive to students' academic achievement and well-being. Yet, in diverse classes, students' negative interethnic attitudes might prevent them from engaging in positive relationships with members of ethnic groups different than their own. The present study examined if and how secondary school students' ( $N=401$ , 54.1% female,  $M_{age}=13.33$  years; 48.9% ethnic minority group students) implicitly and explicitly measured interethnic attitudes were predictive of the social relations in the classroom, in terms of classroom cohesion (i.e., classroom climate and conflict) and peer acceptance (i.e., self-perceived peer acceptance and peer-perceived popularity and likeability). Using a multilevel mediation model, it was examined at the classroom level, if the average classroom implicitly and explicitly measured interethnic attitudes were predictive of classroom climate and conflict. In addition, at the individual level it was examined if the average classroom implicitly measured interethnic attitudes and students' individual perceived explicitly measured attitudes were predictive of students' self-perceived peer acceptance. Then, we examined whether these relationships were mediated by individual perceived classroom climate and conflict. Finally, it was examined if the general implicitly measured class attitudes and students' individual explicitly measured attitudes were predictive of students peer-perceived peer acceptance, in terms of popularity and likeability. At the classroom level, general interethnic attitudes did not predict classroom climate or conflict. At the individual level, students' individual perceived classroom conflict mediated the effect of students' individual explicitly measured attitudes on students' self-perceived peer acceptance. Moreover, students' individual perceived classroom climate mediated the effect of the classes' general implicitly measured attitudes on students' self-perceived peer acceptance. Finally, it was found that students' who had more positive individual explicitly measured attitudes were more often seen as popular. The results imply that individual interethnic attitudes affect students' social relations in the classroom and hopefully contribute to creating positive social relations between all students.

### **The relational social support system in primary school – A longitudinal multi-level study**

**Keywords:** Primary Education, Quantitative Methods, Social Aspects of Learning and Teaching, Social Interaction

**Presenting Author:**Pihla Rautanen, Tampere University, Finland; **Co-Author:**Tiina Soini-Ikonen, Tampere University, Finland; **Co-Author:**Janne Pietarinen, University of Eastern Finland, Finland; **Co-Author:**Kirsi Pyhältö, University of Helsinki, Finland

Socially supportive learning environment is an essential resource for students positive learning experiences at school. Students who find schoolwork meaningful and inspiring tend to have higher levels of well-being also in other areas of life (Upadaya & Salmela-Aro, 2013a). Engagement in studies may also transfer to working life as work engagement and promote social integration in adulthood (Upadaya & Salmela-Aro, 2013b). Thus, social support is a vital resource not just for success in school but also for life course in general. Teachers play a crucial role in constructing a socially supportive learning environment at school with students. Emotional and informational support from teachers has been found to promote students' study engagement as well as their tendency to help each other in schoolwork (Estell & Perdue, 2013; Havik & Westergård, 2019; Wang & Eccles, 2012). Thus, it is essential to identify the factors that affect the teacher's abilities to provide social support for their students. In this study, the individual and contextual factors affecting the students perceived social support from teachers are studied from the teacher's and student's perspective. A three-wave longitudinal survey data was gathered from 63 primary schools and 146 class groups from 4th to 6th graders ( $n=2400$ ) and their class teachers ( $n=146$ ). A two-level latent growth curve analysis is used to study the factors affecting students perceived social support from teachers at the class group level and at the student level. It is studied whether the social resources available for the teacher in the professional community, the teacher's work experience or work-related stress influence the student's perceptions of the social support from the teacher. Also, the effect of the student's study engagement and the class group and school size are examined.

### **Validation for the Constructivist Learning Environment Questionnaires in Iraqi Kurdistan**

**Keywords:** Assessment Methods and Tools, Learning Approaches, Quantitative Methods, Social Aspects of Learning and Teaching

**Presenting Author:**saif Mohammed, University of Szeged, Doctoral School of Education, Hungary; **Co-Author:**Laszlo Kinyo, University of Szeged, Hungary

**Abstract** This study aims to validate a research instrument examining students' attitudes regarding constructivist learning environments in middle and secondary schools in the Iraqi Kurdistan region. The Constructivist Learning Environment questionnaire (Aldridge, Fraser, Taylor, & Chen, 2000) was used to develop this instrument. Moreover, the instrument has two recently developed rating scales taken from the study by Luckay and Laugksch (2015). It further includes seven major constructivist learning features: shared control, uncertainty, personal relevance, student negotiation, critical voice, investigation and respect for differences. This study was adopted a cross-sectional, quantitative research design relying on a survey strategy. Stratified random sampling was used to recruit 1289 students from 8th to 12th grades from both genders to participate in the research project. Data was collected using a questionnaire, and the data were analyzed using PLS-SEM with smart pls software and SPSS 24. The quantitative data were collected from the public, private and international schools in Kurdistan Region. The study aimed to investigate cross-cultural validation for the CLE questionnaires by providing them in both Arabic and Kurdish language. The adapted edition of the Constructivist Learning Environment Questionnaire was designed to elicit relevant information that could enable teachers and researchers to develop and improve teaching quality and the learning process in schools in the Iraqi Kurdistan Region. The result indicated that all seven constructs for constructivist learning environment all the items have loadings greater than 0.40. The data analyses showed that the instrument had internal consistency reliability, discriminant validity, and factor structure. This study tested a proposed conceptual framework based on the constructivist learning environment. The instrument used in this study fulfill the acceptable requirements of the reliability and validity analyses and the result of the study has confirmed that the main data is appropriate for doing further study and the path model analysis test.

### **Session A 6**

18 August 2021 10:15 - 11:15

Session Room 4

Single Paper

Cognitive Science, Learning and Instructional Technology

### **Reading Comprehension**

**Keywords:** Comprehension of Text and Graphics, Educational Psychology, Primary Education, Reading Comprehension, Secondary Education, Self-efficacy

**Interest group:** SIG 02 - Comprehension of Text and Graphics

**Chairperson:** Xiangyuan Feng, University of Groningen, Netherlands

### **Sixth Graders Evaluating the Credibility of Online Texts: The Role of Self-Efficacy Beliefs**

**Keywords:** Comprehension of Text and Graphics, Primary Education, Reading Comprehension, Self-efficacy

**Presenting Author:**Riikka Anttonen, Tampere University, Finland, Finland

This study investigated sixth graders' ( $N = 274$ ,  $M = 12.46$  years) skills and self-efficacy beliefs of critical online reading. Students worked on a computer-based

environment where they read four online texts about the effects of sugar consumption: two more credible and two less credible texts. Students evaluated the credibility of each text by rating the author expertise, benevolence, quality of evidence, and overall credibility of the text with a six-point scale. They were also asked to justify their ratings with a multiple-choice item. Four sum scores for credibility evaluation, one for each online text, were formed from the rating and justification items. Students' self-efficacy of critical online reading was examined prior to (pre-task self-efficacy) and during the critical online reading task (situational self-efficacy). The results show that students performed better in evaluating more credible than less credible online texts. Pre-task self-efficacy ( $r_S = .156, p$

#### **Do digital reading habits support the development of reading comprehension skills?**

**Keywords:** Educational Psychology, Primary Education, Reading Comprehension, Secondary Education

**Presenting Author:**Lidia Altamura García, University of Valencia, Spain; **Co-Author:**Ladislao Salmeron, University of Valencia, Spain

Students' leisure reading habits are a well-known positive predictor of reading comprehension skills. Current increase of digital reading practices, which tend to emphasize short and quick reading interactions, may distort such relationship. To test this assumption, we analyzed data of 604 students aged 10 to 17 regarding the relationship between their reading habits and their reading comprehension skills. Regression analyses indicated that frequency of reading in printed media positively predicts reading comprehension in Primary and Secondary school. In sharp contrast, online-digital reading habits show a negative relationship only in Primary school. Common to both groups, sustained attention levels show positive relations with reading comprehension skills. More importantly, the positive effect of print reading habits in Secondary education was partially mediated by students' sustained attention abilities. Further investigation lines and educational recommendations are discussed.

#### **Session A 7**

18 August 2021 10:15 - 11:15

Session Room 5

Single Paper

Assessment and Evaluation

#### **Assessment and Evaluation**

**Keywords:** Assessment Methods and Tools, At-risk Students, Competencies, Engineering, Higher Education, Motivation and Emotion, Science Education, Survey Research

**Interest group:** SIG 01 - Assessment and Evaluation, SIG 02 - Comprehension of Text and Graphics

**Chairperson:** Ijtihadi Kamilia Amalina, University of Szeged, Doctoral School of Education, Hungary

#### **Predictive validity of a positioning test for Engineering Technology**

**Keywords:** Assessment Methods and Tools, At-risk Students, Engineering, Higher Education

**Presenting Author:**Jolan Hanssens, KU LEUVEN, Belgium; **Co-Author:**Greet Langie, KU LEUVEN, Belgium; **Co-Author:**Carolien Van Soom, University of Leuven, Belgium

The lack of central standardized exams in secondary education and the open admission policy for higher education in Flanders lead to a heterogeneous inflow of students. This is particularly a challenge in science and engineering programs, as these programs presuppose a certain level of mathematical skills. To tackle this issue, Flemish universities organize non-binding positioning tests. These are meant to increase prospective students' understanding of their own starting competences and help them make an informed study choice. The main goal of this study is to analyze the predictive validity of the positioning test for the Bachelor in Engineering Technology. Nested linear and logistic regression analyses with data from 204 students, spread over 3 academic years, showed that the mathematical component of the positioning test had incremental predictive validity over prior achievement and time management. Of particular interest, the mathematical component was also shown to be a key predictor in identifying at-risk students.

#### **Setting the baseline for the development of a feedback ecosystem to encourage feedback literacy**

**Keywords:** Competencies, Engineering, Higher Education, Survey Research

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

Feedback has a major influence on learning and achievement, but students are not always aware of opportunities and responsibilities that come with it. This paper examines first-year engineering students' perceptions of feedback, and looks for variables that may influence their interaction with it related to their educational background and learning and study skills. An exploratory study is performed, using the Feedback Orientation Scale to set the baseline on incoming students' perceptions of the utility of feedback, their accountability, and their self-efficacy. The final goal of this research is to develop a feedback ecosystem to encourage feedback literacy, by supporting students to interact with their feedback. Therefore, understanding students' orientation towards feedback is key to designing an appropriate ecosystem. Future cohorts of incoming students can be compared to this baseline at different stages in the development of the feedback ecosystem or after implementing specific interventions. In this paper it is shown that first-year students are aware of the value of feedback. They feel responsible to interact with feedback but are less confident on their competences to interpret and respond to feedback appropriately. When they start in higher education, a statistically significant medium positive correlation of students' motivation and their feedback orientation is shown, which confirms that motivated students are more open to feedback to support their learning. Students' time management and test strategy skills have a statistically significant low positive correlation with their feedback orientation. There is no significant effect of incoming students' educational background on their feedback orientation. Next to the quantitative data collected in this paper, qualitative data is required to fully understand the complex feedback processes students are engaged in, and the effect that these processes have on their orientation towards feedback.

#### **Assessing Student Engagement: A Case Study in Vietnamese Higher Education**

**Keywords:** Assessment Methods and Tools, Higher Education, Motivation and Emotion, Science Education

**Presenting Author:**Huy Cuong Nguyen, University of Szeged, Viet Nam

AbstractThe literature review shows that student engagement (SE) has an important role in the academic success of students. There are positive links between SE and educational purposeful activities, achievement, persistence, and graduation. With increased emphasis on promoting SE in higher education, it becomes imperative that educators are able to gauge, monitor, and assess SE as a component of the overall learning experience. The aims of the research were to investigate the forms and levels of SE in learning at the institutional level, to exam the relationship between SE and learning outcomes, and investigate how SE affects student satisfaction and academic success. The instrument was a questionnaire adapted from the College Student Report of the National Survey of Student Engagement (NSSE) of the United States. The participants including 910 second-year and fourth-year undergraduate students of Vietnam National University was selected by stratified sampling technique. The collected data were summarized and analyzed by using SPSS and other statistical soft-wares. The findings of the study show that the five-benchmark model of NSSE did not provide a good fit for the collected data. The results of Exploratory Factor Analysis (EFA) produces a better fit model using six factors with 29 items. Positive correlations were found between engagement and learning outcome scales. The regression analysis shows that there was a relationship between students' engagement in learning activities and their level of satisfaction and academic success. **Keywords:** student engagement; engagement scales; educational outcome scales, academic success

#### **Session A 8**

18 August 2021 10:15 - 11:15

Session Room 2

Single Paper

### Early Childhood Education

**Keywords:** Action Research, At-risk Students, Case Studies, Developmental Processes, Early Childhood Education, Ethnography, Learning and Developmental Difficulties, Parental Involvement in Learning, Primary Education, Psychometrics, Quantitative Methods

**Interest group:** SIG 05 - Learning and Development in Early Childhood, SIG 25 - Educational Theory

**Chairperson:** Rhiannon Moore, University of Bristol, United Kingdom

### Becomings of children's (in)equality of agency

**Keywords:** Action Research, Case Studies, Ethnography, Primary Education

**Presenting Author:** Anna Kristiina Kokko, University of Eastern Finland, Finland

In this posthuman and new materialism informed study, we contribute to understanding of how children's (in)equality of agency becomes in school sociomaterial relations. The empirical data was generated in one Finnish classroom together with 42 elementary school children (age 10–11) through a holistic frame of waiting fields. The data comprises events where children reflect on their school days by viewing documents, they themselves produced as well as researcher's field diary from a period of three weeks. The findings show that in addition to pedagogical standpoints and teacher-student interaction, the production of (in)equality of children's agency is also affected by broader material forces. Two non-human actors that participate in the everyday life of school in many ways are introduced and discussed.

### The last will be first? Stability of school readiness in 3-year old children

**Keywords:** At-risk Students, Developmental Processes, Early Childhood Education, Learning and Developmental Difficulties

**Presenting Author:** Erica Kamphorst, University of Groningen, Netherlands; **Co-Author:** Marja Cantell, University Groningen, Netherlands; **Co-Author:** Gerda Van der Veer, University of Groningen, Netherlands; **Co-Author:** Alexander Minnaert, University of Groningen, Netherlands; **Co-Author:** Suzanne Houwen, University of Groningen, Netherlands

A child's school readiness has been found to be predictive of later academic achievement and school functioning (Snow, 2006). Understanding distinct developmental trajectories, specifically in terms of stability of school readiness could inform screening and intervention policies. Therefore, this study set out to explore stability of school readiness in a sample of 3-year and 4 month children ( $N = 90$ ; 46% girls). We employed a person-centered approach to acknowledge the intertwined nature of school readiness skills within different developmental domains (Snow, 2007). A multi-informant and multi-method test battery assessed children's school readiness in terms of executive function, language and emergent literacy, motor, and socioemotional skills, at two six-monthly waves. For each wave, latent profile analysis revealed distinct profiles of school readiness, consisting of specific combinations of relative strengths and weaknesses. Two types of stability, structural and individual, will be examined. Concerning the first, we will qualitatively compare the number and shape of profiles at two time-points. Regarding the latter, we will create different stability types and compute proportions of children within each type. Finally, we will carry out permutation chi-square tests of independence to examine associations between child demographic factors and maternal educational level, and child stability type. As far as we know, we are the first to explore school readiness profiles at an age well before children enter any form of formal early childhood education (e.g., kindergarten). Doing so holds the potential for optimally preparing each child before the transition to a structured and challenging school setting, rather than remedying an already existing gap after this crucial step in a child's early life. **Keywords:** school readiness, stability, person-centered approach, latent profile analysis

### Structure of early parent-child interactions in NEPS-SC1 observational data

**Keywords:** Early Childhood Education, Parental Involvement in Learning, Psychometrics, Quantitative Methods

**Presenting Author:** Daniel Mann, University of Bamberg (Otto-Friedrich-Universität Bamberg), Germany

Although the relevance of early parent-child interactions for children's development is evident in the literature, a differentiated understanding of the structure and specific relations of parent-child interactions to domains of child development under the age of three has not been frequently approached. As this perspective is common for research on child development from age three onward, the question is raised, whether a differentiated model of early parent-child interaction in play situations as a *learning environment* can be conceptualized and supported by empirical evidence. Based on existing theoretical frameworks, a bi-factor model of educational process quality in parent-child play with two dimensions of parental interaction behavior, *emotional support* and *cognitive stimulation*, is proposed. This model is tested for three consecutive age groups under three, using data from the German NEPS-SC1 panel. This panel includes observational data on parent-child interactions at three measurement occasions with child ages 7, 17, and 26 months, respectively. Observational data was subject to a standardized high-inference rating procedure, yielding separate codes for a variety of behavioral aspects. Two nested longitudinal structural equation models of parental interaction behavior were fit to the data ( $n = 739$ ). Compared to the single-factor model, the bi-factor model demonstrated equal or even better overall fit to the data. As the role of *cognitive stimulation* in infancy is less pronounced than emotional sensitivity and support, the bi-factor model might be useful studying the specific role of *cognitive stimulation* in regards to early child development. Differentiated modeling of parent-child interactions permits longitudinal assessment of specific effects on domains of early child development.

### Session B 1

18 August 2021 11:30 - 12:30

Session Room 6

Roundtable

Instructional Design, Teaching and Teacher Education

### Teaching and Instruction

**Keywords:** Assessment Methods and Tools, Cultural Diversity in School, Emotion and Affect, Experimental Studies, Instructional Design, Problem Solving, Quantitative Methods, School Effectiveness, Social Aspects of Learning and Teaching, Student Learning, Teacher Effectiveness, Teaching/Instruction

**Interest group:** SIG 06 - Instructional Design, SIG 08 - Motivation and Emotion, SIG 18 - Educational Effectiveness and Improvement

**Chairperson:** Valentina Reitenbach, Germany

### Studying Diverse Solution Attempts as Preparation for Learning from Subsequent Instruction

**Keywords:** Experimental Studies, Instructional Design, Problem Solving, Teaching/Instruction

**Presenting Author:** Charleen Brand, Ruhr University Bochum, Institute of Educational Research, Germany; **Co-Author:** Katharina Loibl, University of Education Freiburg, Germany; **Co-Author:** Nikol Rummel, Ruhr University Bochum, Germany

Problem solving prior to instruction (PS-I) denotes instructional designs that feature an initial problem-solving phase followed by a direct instruction. In the problem-solving phase, students generate own solution ideas to a novel problem as preparation for learning from subsequent instruction. For this, they need to activate relevant prior knowledge. It is assumed that prior knowledge activation during the problem-solving phase prepares students for learning in the instruction phase. However, it is still unclear what kind of prior knowledge activation is needed to facilitate learning. While findings on the relationships between certain solution characteristics (such as quality and quantity of solutions) and learning gains have been mixed, they indicate that specifically the prior knowledge activation involved with diverse solution attempts, that is, conceptually different solutions, could prepare students for learning from instruction. However, these findings only relied on correlational results. Recent studies indicate an opportunity for closer experimental investigations: It was found that students were prepared for learning from instruction not only by generating own solution attempts during problem solving, but also by studying other students' solution attempts. This suggests that similar prior knowledge activation processes are fostered in both preparatory settings. In contrast to the generation setting, the solution-study setting allows for an experimental manipulation of the solution attempts being presented to learners. Thus, this project aims to experimentally vary the diversity of solution (i.e., the number of different knowledge components that are addressed in a set of solutions) that students are being exposed to prior to instruction, in order to further investigate the kind of prior knowledge activation relevant for students' learning in PS-I.

### **Teacher effectiveness in India: understanding teacher factors in the context of a 'learning crisis'**

**Keywords:** Quantitative Methods, School Effectiveness, Student Learning, Teacher Effectiveness

**Presenting Author:** Rhiannon Moore, University of Bristol, United Kingdom

With the growing universalisation of education in India, teachers are subject to new challenges and unfamiliar conditions. Growing numbers of 'first generation learners' require increased capacity to support issues of equity and access within the classroom, while concerns about a potential 'crisis' in learning outcomes raise the expectations placed on teacher 'quality'. The policy environment is similarly challenging, simultaneously venerating teachers while also calling into question their professional competencies and motivations for the role. This presentation uses quantitative analysis of a secondary dataset collected from ~10,000 Grade 9 students and 560 teachers in two Indian states (Andhra Pradesh and Telangana) to examine how teacher-level factors relate to student learning and progress in India, and the ways in which this varies across different types of schools. A series of four-level multilevel random effects models are used to address these questions, with a particular focus on factors relating to teacher motivation, professional knowledge, and classroom practice – issues identified within existing literature as being of particular relevance in the Indian context. Within the fixed-effects part of these models, factors relating to these teacher characteristics are found to be significantly associated with student learning outcomes, both when considered individually and in combination, although the strength and direction of this association varies depending on the factor considered. Notably, these trends are revealed to be largely consistent across different school management types, as well as also being found within schools, suggesting a relatively consistent relationship with student outcomes and highlighting the importance of understanding more about how teachers can be better supported if the proclaimed 'learning crisis' is to be addressed.

### **Would that be racist? Constructing a scale on teacher students' concerns about cross-ethnic teaching**

**Keywords:** Assessment Methods and Tools, Cultural Diversity in School, Emotion and Affect, Social Aspects of Learning and Teaching

**Presenting Author:** Anna K Nishen, Freie Universität Berlin, Germany; **Co-Author:** Diana Schieck, Freie Universität Berlin, Germany; **Co-Author:** Ursula Kessels, Freie Universität Berlin, Germany

Teacher education is designed to prepare those university students aspiring to become teachers for the classroom. When teacher students feel insufficiently prepared, they may be concerned about various aspects of teaching. However, there may exist certain types of interactions with subgroups of students for which there are specific concerns, e.g., interactions with students from a different race/ethnicity or cultural background (Marshall, 1996; Rauscher & Wilson, 2017). These cross-ethnic teaching concerns may have negative effects on teachers' and students' well-being and learning—those from ethnic minorities and majorities alike (Bentley-Edwards et al., 2020; Rauscher & Wilson, 2017). So far, research on these issues focused on U.S.-American samples. Because the relationships between ethnic groups vary across countries, it is worth examining whether and in what respect teacher students in Germany are concerned about cross-ethnic teaching interactions and to develop a measurement tool suitable for further quantitative research.

The present research uses a qualitative approach to examine which concerns teacher students—both ethnic-majority and ethnic-minority—have and to gain material for developing a questionnaire. In-depth interviews ( $n = 19$ ) are combined with written answers to open questions from a larger sample ( $n = 115$ ). Teacher students often framed cultural differences as challenges and contemplated ways to talk about different cultures. For example, they expressed concerns about (a) language barriers, (b) faux-pas regarding cultural differences, (c) how to be sensitive of other cultures' views, and (d) witnessing or being the target of discrimination. At the roundtable session, we will present the questionnaire developed on this basis and discuss the interpretation of scores that indicate low concerns. These scores could indicate either that students have never had these concerns or that they have found ways to assuage them. Depending on the meaning of low scores, concerns may relate differently to various constructs (e.g., self-efficacy).

### **Session B 2**

18 August 2021 11:30 - 12:30

Session Room 8

Roundtable

Cognitive Science, Lifelong Learning

### **Self-Regulation and Self-Efficacy**

**Keywords:** Cognitive Development, Competencies, Language (Foreign and Second), Learning Approaches, Metacognition, Motivation, Quantitative Methods, Self-efficacy, Self-regulation, Survey Research, Writing/Literacy

**Interest group:** SIG 15 - Special Educational Needs, SIG 16 - Metacognition

**Chairperson:** Bea Mertens, University of Antwerp, Belgium

### **Training of metacognitive monitoring abilities in primary school children**

**Keywords:** Cognitive Development, Metacognition, Quantitative Methods, Self-regulation

**Presenting Author:** Florian Bühler, University of Bern, Switzerland; **Co-Author:** Claudia Roebers, University of Bern, Switzerland

Metacognitive monitoring is a consistent predictor of school achievement in primary school children. Previous research revealed that a rich metacognitive environment—such as parents and teachers who encourage metacognitive thinking—is crucial for metacognitive development. However, it remains unsolved whether procedural metacognitive abilities are explicitly trainable in a cognitive task. We evaluated a six-times, computer-based intervention program for first graders (~6 years old) aimed at improving metacognitive monitoring. We assigned the subjects to either an active control group (CG,  $n = 50$ ), a performance feedback group (PG,  $n = 50$ ), or a monitoring feedback group (MG,  $n = 50$ ). The intervention consisted of a playful paired-associates task, in which children received computerized feedback on their recognition performance (PG and MG) and their confidence judgments (only MG). Pre- and post-measures included a paired-associates task for procedural metacognition (different from the paired-associates in the intervention). We expected that post-intervention children in the MG group would monitor more accurately than children in the PG and CG and that children in the PG would monitor more accurately than children in the active control group (MG > PG > CG). Furthermore, to investigate transfer effect of our intervention we assessed executive functions in the pre- and postmeasures. Results are not available yet, but will be presented at the conference. They may provide first insights into the trainability of procedural metacognitive abilities.

### **Exploring writing competence and affective and motivational aspects of writing in the EFL classroom**

**Keywords:** Competencies, Language (Foreign and Second), Self-efficacy, Writing/Literacy

**Presenting Author:** Lea Siekmann, Westfälische Wilhelms-Universität Münster, Germany; **Co-Author:** Vera Busse, Westfälische Wilhelms-Universität Münster, Germany; **Co-Author:** Judy M. Parr, University of Auckland, New Zealand

Writing competence in English as a foreign language (EFL) plays an increasingly important role due to globalisation and digitalisation processes. However, studies show that German students have particular difficulties writing in English, especially students who attend vocationally focused schools. Although there is a strong empirical basis on how to promote writing competence, little is known about current practices in English classes in Germany. Our paper examines writing competence of EFL learners in Year 9 and affective and motivational aspects of writing. Writing competence was assessed via two writing tasks (one narrative and one argumentative text). We evaluated texts regarding their structure and coherence. All texts were evaluated by the same two raters in order to guarantee consistency. Our findings suggest that although students at *Hauptschule* and *Gesamtschule* especially struggle with writing, all students in fact have difficulties in structuring their texts with paragraphs and in creating coherence and connecting ideas. A comparison of different writing prompts shows that students have more difficulties writing argumentative texts than narrative texts. Questionnaire data further reveals a positive correlation between students' writing performance and students' self-efficacy in writing and a negative correlation with writing anxiety. It may, therefore, be important to promote both writing competence and to provide affective and motivational support for students. This becomes especially relevant in times of school closings due to COVID-19. In the Roundtable session, we would like to present our findings and discuss ideas on how to move the project further during school closing. Moreover, ideas on how to support students in writing more structured and coherent texts will be provided.

### **How do second-chance adults learn? Exploring learning profiles on different contextual levels**

**Keywords:** Learning Approaches, Motivation, Self-regulation, Survey Research

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

When it comes to lifelong learning a part of the adult population doesn't seem to be able to get on track, as they leave secondary school early. Adult secondary education (ASE) provides a second chance for these adults to develop their skills in learning. The last two decades the ASE population has changed. ASE learners are getting younger and their backgrounds are getting more and more diverse. Until now, little is known about how these adults learn and how the quality of learning differs between ASE learners. These insights are necessary for instruction to be able to develop the necessary learning skills. This project aims to gain a comprehensive insight in individual qualitative differences in learning in ASE and wants to explore the role of instruction in enhancing the quality of learning. In this project qualitative differences in learning are understood as learning profiles in which learning strategies, academic motivation, and perceived teaching style form a logical whole. These learning profiles will be measured both on a general level and thus as a preferred way of learning and on a course specific level, where the general learning profile faces instruction. Learning profiles will be measured by means of two questionnaires. The first questionnaire maps the different dimensions of the learning profile as a general preference when entering ASE. The second questionnaire maps the development of the learning profile, while functioning in different ASE courses. By means of correlations and multilevel analyses data will be analyzed. By doing so we not only gain more insight into the consistency and variability of learning profiles across courses but also into where the quality of learning potentially can be impacted on by teaching style.

### Session B 3

18 August 2021 11:30 - 12:30

Session Room 9

Roundtable

Learning and Instructional Technology, Motivational, Social and Affective Processes, Teaching and Teacher Education

#### Design-based Research

**Keywords:** Design-based Research, Early Childhood Education, Educational Technology, Higher Education, In-service Teacher Education, Motivation, Qualitative Methods, Teacher Professional Development, Teaching/Instruction

**Interest group:** SIG 05 - Learning and Development in Early Childhood, SIG 11 - Teaching and Teacher Education, SIG 26 - Argumentation, Dialogue and Reasoning

**Chairperson:** Ijtihadi Kamilia Amalina, University of Szeged, Doctoral School of Education, Hungary

#### Development of FOCUS App for Assessment of Approaches to Learning in Kenya

**Keywords:** Design-based Research, Early Childhood Education, Educational Technology, Motivation

**Presenting Author:**STEPHEN AMUKUNE, University of Szeged, Hungary; **Co-Author:**Karen Barret, University of Colorado at Denver, United States; **Co-Author:**Norbert Szabo, Institute of Education, University of Szeged, Hungary; **Co-Author:**Krisztián Józsa, Institute of Education, University of Szeged, Hungary

Children who progress to kindergarten with fewer school readiness skills show lower school achievement throughout schooling (Burchinal et al., 2015); therefore, its assessment is critical. In Low and Middle-Income countries like Kenya, performance-based tools and trained examiners to assess school readiness domains are lacking (Willoughby et al., 2019). This study aims to develop the Kenyan version of the FOCUS app (Finding Out Children's Unique Strengths) (Barret et al. 2017), a tablet-based game-like assessment of pre-academic skills and approaches to learning domains: Mastery Motivation and Executive Functions (Buek, 2019). Approach to learning is one of the school readiness domains that is rarely fully assessed (Kagan et al., 1995). We used a Design-Based Research approach (McKenney & Reeves, 2014) to redesign, develop and validate the app in the Kenyan context. We later followed children longitudinally (n = 86) from preschool to grade 1 to assess the applicability to the two age groups, psychometric characteristics, and longitudinal change/stability of FOCUS app measures. Results showed that the FOCUS app is valid and reliable. FOCUS app tasks on mastery motivation predicted number and letter recognition in grade 1 positively. We recommend that teachers and parents adopt the FOCUS app during school-readiness tests and intervention for children with low academic achievement due to insufficient approaches to learning skills.

#### Designing for teacher education: Exploring the concept of a responsive curriculum.

**Keywords:** Design-based Research, Higher Education, In-service Teacher Education, Qualitative Methods

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

Curriculum designers in teacher education are challenged to design curricula that react to, and anticipate, complexity and change and make a curriculum more adaptive, flexible or responsive. The aim of the current study is to enhance understanding of the responsiveness of teacher education curricula. A curriculum is a plan for learning and it organizes, sequences and stimulates learning experiences in school and in practice (Billett, 2011). We consider a curriculum as responsive when it takes individual differences and needs of learners into account, is adaptive to a variety of contexts in occupational practice and anticipates change in society (Author, 1995; Turkenburg & Vogels, 2017). A curriculum includes different levels (micro, meso), design dimensions (epistemic, social, instrumental, temporal and spatial) and actors (students and their supervisors) (Author, 2019; Van den Akker, 2013). In this participative design research a variety of design initiatives in five bachelor science teacher education programs (ISCED 6) are included. Data sources were documents, participatory observations of organized design sessions, project meetings, and just-in-time interviews. A logbook was used to keep track of the initiatives and to reflect on design activities including creative leaps. The data was analyzed qualitatively using templates. The results are expected before the Jure conference in August 2021.

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#### Developing dialogue in primary mathematics classrooms supported by online interactive technology

**Keywords:** Design-based Research, Educational Technology, Teacher Professional Development, Teaching/Instruction

**Presenting Author:**Qian Liu, University of Cambridge, UK, China

The significant role of dialogue in students' learning has been well evidenced in academic discourse and increasingly valued in educational practice. The rapid technological advances and the enhanced accessibility of multi-functional digital tools have opened opportunities to explore and investigate the corresponding pedagogical approaches to foster productive classroom dialogue. In this roundtable session, I attempt to share a part of my PhD research project, focusing on presenting how seven Chinese mathematics teachers from two primary schools used parallel lesson study to explore and develop their pedagogical practices with online interactive technologies to support classroom dialogue. It was found that the teachers had enacted the key technology affordances of online interactive platforms, for example, interactivity, multimodal representation, visibility to others' contributions, revisiting previous contributions, to create a blended dialogic environment. In the broader dialogic space, students' participation in both online and face-to-face dialogue and engagement with each other's ideas were supported. Furthermore, the dialogue taking place in one lesson can be sustained, in turn supporting students' engagement with others and inner reflective dialogue. The findings suggest that the dialogic approaches to using online interactive technologies could overcome physical and time constraints in the traditional classroom. However, the teachers also reported the challenges, including quickly viewing, analysing and responding to students' online various contributions and orchestrating the follow-up whole-class dialogue after reasoned integration. Based on the reported preliminary findings, I hope to invite participants to discuss the two open questions respectively concerning using the design-based research approach to developing lesson study and potential practical solutions to the mentioned challenges when using online interactive technologies to facilitate classroom dialogue.

## Session B 4

18 August 2021 11:30 - 12:30

Session Room 1

Roundtable

Assessment and Evaluation, Educational Policy and Systems

### Secondary Education

**Keywords:** At-risk Students, Citizenship Education, Educational Attainment, Educational Policy, Educational Psychology, Qualitative Methods, Quantitative Methods, Secondary Education, Writing/Literacy

**Interest group:** SIG 12 - Writing, SIG 13 - Moral and Democratic Education

**Chairperson:** Qiyun Zhu, China

### Perfectionism, achievement striving, and academic well-being during upper secondary education

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

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

Recent evidence indicates a worrying increase in academic pressure and school burnout among Finnish upper secondary students. As the demands to excel due to the reform of student admissions to higher education put even further stress on students, it is timely to investigate the role of perfectionistic tendencies in students' academic well-being. Perfectionism is characterised by a combination of two tendencies: perfectionistic strivings and concerns. Group-based studies (forming groups of perfectionists based on these two tendencies) have informed us that meaningful perfectionistic profiles can be identified and that they predict, for example, psychological well-being. However, studies examining perfectionistic profiles among adolescents and how they link with academic well-being are scarce, especially in Finland. Further, gender differences in and stability of the profiles are surprisingly understudied. The aim of this PhD project is to investigate Finnish upper secondary students' perfectionism, achievement striving (grades), educational aspirations, and academic (engagement, burnout) and more general well-being (depression, anxiety, stress), with a special focus on gender differences and developmental dynamics. This article-based dissertation will consist of three substudies. Study I examines general and vocational upper secondary students' perfectionistic profiles and how they relate to achievement striving and well-being. Study II examines temporal stability and gender differences in perfectionism dimensions and profiles, and Study III investigates the stability of profiles during upper secondary studies and how they predict academic and well-being outcomes.

Longitudinal data will be collected from upper secondary schools (N~3000). Both variable- and person-oriented approaches and different model-based analyses (LPA, LTA, GMM) will be applied for the classification of students into distinct perfectionism groups and exploring group differences and developmental trajectories over time. The investigation of academic well-being is crucial in the current situation (admissions reform, increased remote teaching) and, here, the inclusion of students' perfectionism might yield added value.

### Schools' Notions of Citizenship, Belonging and Collective Identities

**Keywords:** Citizenship Education, Educational Policy, Qualitative Methods, Secondary Education

**Presenting Author:** Emma Brummer, University of Antwerp, Belgium; **Co-Author:** Noel Clycq, University of Antwerp, Belgium

Increasing ethno-cultural diversity is common to most urban areas in Europe and debates on social cohesion, national identities, and citizenship are prominent in contemporary society and education. Emerging interest in citizenship education is therefore perceptible in research, policy and practice. Substantial literature has explored the normative, 'fact-based' nature of citizenship education. Yet, previous research has shown that ethnic minority students in Europe construct different collective identities than ethnic majority students and national identities appear to be less attractive to ethnic minority youth. These results imply that dominant understandings of national identities often make it difficult to include all citizens in a shared national imagination (Alba & Foner, 2015), which may result in ethnic minorities showing lower levels of national belonging in 'nation-states'. Thus, studies mainly focusing on cognitive knowledge or behavioral aspects related to identity and citizenship, do not grasp the more covert emotional processes related to issues of belonging and citizenship. Different notions of citizenship, emotional dimensions of belonging in society as well as the power relations and inequalities involved are rarely scrutinised in education (Arnot & Swartz, 2012). This illustrates the need to further elucidate the concept of belonging in relation to the concept of citizenship in education. The current study aims to fill this gap by critically examining the local, national and political contexts in which policies are enacted. In this study, I examine how schools in Flanders – the Northern part of Belgium – construct, interpret, and negotiate belonging, citizenship, and collective identities within existing discourses and political pressures targeting education. Drawing on interviews with headteachers and policymakers as well as analyzing policy documents on citizenship education, this paper presents a variety of notions on how national and political discourses on citizenship, belonging, and social cohesion affect policies and practices of secondary schools in Flanders.

### Migration background and writing competence in German: An exploration of Year 9 students in Germany

**Keywords:** At-risk Students, Educational Attainment, Secondary Education, Writing/Literacy

**Presenting Author:** Nora Müller, Westfälische Wilhelms-Universität Münster, Germany; **Co-Author:** Vera Busse, Westfälische Wilhelms-Universität Münster, Germany

The ability to write well-structured and coherent texts is a requirement for students' educational success. However, there is evidence to suggest that many upper-secondary students at schools without a scholarly focus (i.e. not *Gymnasium*) and especially those with migration backgrounds, struggle with establishing text structure when writing in German (Neumann & Lehmann, 2008). Our paper examines writing competence in terms of structure and coherence in descriptive texts, as well as the perception of writing-related practices of a sample of  $N = 208$  Year 9 students who attend secondary schools (except the *Gymnasium*). In particular, we focus on differences between students with and without migration backgrounds and with different language backgrounds. In the writing assessment, students wrote instructive texts to a writing prompt and filled in a questionnaire to assess their perception of the frequency of writing activities, teachers' feedback methods, and feedback quality. The data suggest that the majority of students have difficulties structuring their texts, and establishing text coherence. Students especially need more support from their teachers to structure their texts, since most of the texts from our sample lack an introduction (55%) or a conclusion (73%), and they often do not contain paragraph breaks (87%). Also, students with migration backgrounds and particularly those who do not speak German at home scored lower than peers without a migration background and peers who speak German at home. Particularly L2-learners need more writing support from their teachers. It is therefore concerning that students have few opportunities to write texts (2-3x per month) and only receive feedback once per month. Correlations indicate a positive relationship between writing quality and the quality of teachers' feedback. In the roundtable, we will present and discuss results, as well as pedagogical implications. Also, we would like to discuss possible strategies to proceed considering COVID-19-related school closings.

## Session B 5

18 August 2021 11:30 - 12:30

Session Room 5

Roundtable

Lifelong Learning

### Feedback

**Keywords:** E-Learning/Online Learning, Language (Foreign and Second), Language (L1/Standard Language), Lifelong Learning, Meta-analysis, Qualitative Methods, Social Interaction, Writing/Literacy

**Interest group:** SIG 12 - Writing

**Chairperson:** Jenni Kunnari, University of Oulu, Finland

### **Conflicting roles of feedback on a large-scale online Q&A platform**

**Keywords:** E-Learning/Online Learning, Lifelong Learning, Qualitative Methods, Social Interaction

**Presenting Author:**Alena Seredko, University of Gothenburg, Sweden

Peer feedback is recognized as an important aspect of learning. Voting, as a form of feedback, is employed across multiple online settings, including social media, discussion forums, question and answer platforms, as well as MOOCs, LMSs, etc. However, its role is rarely examined from users' perspective. This study aims to investigate how users conceptualize the role of voting on Stack Overflow, a Q&A platform for software developers. The dataset consists of 32 discussion threads on the topic of voting extracted from Meta Stack Overflow, an accompanying Q&A platform where users discuss the main site. The preliminary result of the analysis of discourse revealed tension in how users topicalize the nature of voting, which I discuss using the concept of addressivity (Linell, 2001). On the one hand, voting is conceptualized as interaction between the voter and the direct addressee, i.e. the post author, thus playing the role of peer feedback mechanism. Aspects that are made prominent include 'unfriendliness' of downvoting, as well as the 'frustrating' lack of explanations limiting the addressee's opportunities for learning from this feedback. An alternative (or sometimes overlapping) view on voting is to regard it as a content curation tool. Votes are discussed as interaction between the voter and the platform, indirectly addressed to the remote audience of future users, for whom high-quality content is being made more visible. Therefore, providing explanations or considering the emotional reaction of the post author is considered irrelevant. The results highlight the importance of examining users' interpretations of platform tools for peer feedback, especially such nonverbal tools like voting, as possible differences may lead to misunderstanding and tensions among users, thereby creating barriers to their participation and learning.

### **Feedback for L1, L2 and FL writing: A discussion of in- and exclusion criteria for a meta-analysis**

**Keywords:** Language (Foreign and Second), Language (L1/Standard Language), Meta-analysis, Writing/Literacy

**Presenting Author:**Sina Scherer, Westfälische Wilhelms-Universität Münster, Germany; **Co-Author:**Steve Graham, Arizona State University, United States;

**Co-Author:**Vera Busse, Westfälische Wilhelms-Universität Münster, Germany

Writing competence is crucial for academic success and is a basic job requirement. Different forms of feedback can play an important role in improving students' writing development (Biber et al., 2011) and writing quality (Graham, Hebert & Harris, 2015). However, many adolescent students struggle with writing and need better support, especially second language learners (L2), who are often students with a migration background, as well as foreign language (FL) learners. Yet, it is unclear to date which writing support and feedback methods work best for L1 (first language) learners, L2 (second language) learners, particularly students with a migration background, and FL (foreign language) learners. Existing meta-analyses have explored the effectiveness of feedback on writing only for L1 learners (e.g. Graham & Perin, 2007; Huisman et al., 2018) or have only focused on the effectiveness of corrective feedback for second language acquisition (e.g. Li, 2010). Other meta-analyses have not differentiated between L2 and FL learners when investigating the impact of feedback on learners' language acquisition (e.g. Miller, 2003), or have focused on the impact of feedback on writing development only for university students (Biber et al., 2011). In addition, previous meta-analyses have largely neglected affective and motivational outcomes of feedback interventions. To fill the gap outlined above, our project's overarching aim is to investigate how teachers can best promote writing competence and affective and motivational outcomes for L1, L2, and FL learners through feedback. Therefore, we will conduct a systematic literature search and meta-analysis in line with existing guidelines (Cherry, Boland, Dickson, 2017) to synthesize experimental and quasi-experimental studies, focusing on students from secondary school to university level. Inclusion and exclusion criteria as well as the study's search terms and the rationale for the starting point of the literature search will be presented and discussed at the round table session.

### **Workshops I 1**

18 August 2021 13:30 - 14:30

Session Room 7

JURE 2021 Workshop

#### **How to become actively involved in the research community with Jure & Earli networks**

**Keywords:** Communities of Learners, Communities of Practice, Cooperative/Collaborative Learning, Researcher Education

#### **Interest group:**

The aim of the workshop is to present the opportunities and benefits that could promote junior researchers and early career scientists' active involvement in Jure and Earli networks. The hands-on workshop gives you practical tools to broaden your network strategies that are, in fact, easy and enjoyable to implement. The workshop will exploit experiential learning activities and case studies to engage participants with their peers in setting personal networking goals, as well as in designing, testing and reflecting upon their networking strategies. By the end of the workshop participants will be expected to identify, evaluate and modify formal and informal networking strategies. Questions that will be discussed are e.g.,: Do you wonder how to become engaged in the research community? Are you staying in the shadow of your supervisor during conferences? Or maybe you are feeling more comfortable engaging in conversations with your colleagues or co-workers instead of other peers or senior researchers during international scientific events? Or are you simply interested in becoming more involved in the Jure/Earli network? Join us by registering for this interactive workshop and pave the road into the research community!

#### **How to become actively involved in the research community with Jure & Earli networks**

**Presenting Author:**Hanke Korpershoek, University of Groningen, Netherlands; **Presenting Author:**Panagiota Christodoulou, University of Western Macedonia, Greece

The aim of the workshop is to present the opportunities and benefits that could promote junior researchers and early career scientists' active involvement in Jure and Earli networks. The hands-on workshop gives you practical tools to broaden your network strategies that are, in fact, easy and enjoyable to implement. The workshop will exploit experiential learning activities and case studies to engage participants with their peers in setting personal networking goals, as well as in designing, testing and reflecting upon their networking strategies. By the end of the workshop participants will be expected to identify, evaluate and modify formal and informal networking strategies. Questions that will be discussed are e.g.,: Do you wonder how to become engaged in the research community? Are you staying in the shadow of your supervisor during conferences? Or maybe you are feeling more comfortable engaging in conversations with your colleagues or co-workers instead of other peers or senior researchers during international scientific events? Or are you simply interested in becoming more involved in the Jure/Earli network? Join us by registering for this interactive workshop and pave the road into the research community!

### **Workshops I 2**

18 August 2021 13:30 - 14:30

Session Room 3

JURE 2021 Workshop

#### **How to ground technology-enhanced learning research in (new) theories of cognition and learning?**

**Keywords:** Educational Technology, Instructional Design, Science Education, Technology

#### **Interest group:**

STEM (science, technology, engineering, and mathematics) domains involve the study of worldly entities, phenomena, and related concepts that are often beyond everyday human perception and interaction (e.g. microbes, chemical reactions). External representations (ERs; equations, graphs, physical and virtual models) of such entities, phenomena, and concepts are thus critical to sense-making, thinking, and learning processes in STEM. Recent developments in our understanding of how the mind works suggest that mental activities (e.g. sense-making, learning, thinking) are strongly embodied (body-based/mediated). We understand ERs, and the concepts they represent, through our bodily movements and interaction with them. Technology-enhanced learning environments become particularly relevant in such a theoretical stance, as they afford the generation of novel body-based/mediated ways to interact with STEM ERs, thus facilitating effective body-based learning and engagement with STEM concepts. This workshop will focus on how this new understanding of cognition can help

us revisit the designs of technology-enhanced learning environments in STEM education, and how these intervention designs could be effectively grounded in new embodied learning theories. Specifically, we will try to answer the following two questions: (i) How to extract a design principle from theory?, and (ii) How to instantiate that design principle in a technology-enhanced learning environment (TELE)? We will do so using examples of a few evidence-based technology-enhanced embodied learning environments (and their pedagogical designs) popularly used in STEM teaching worldwide.

#### **How to ground technology-enhanced learning research in (new) theories of cognition and learning?**

**Presenting Author:**Prajakt Pande, Roskilde University, Denmark; **Presenting Author:**Rwitajit Majumdar, Kyoto University, Japan; **Presenting Author:**Shitanshu Mishra, UNESCO MGIEP, India; **Presenting Author:**Jayakrishnan Madathil Warriem, Indian Institute of Technology Madras, India; **Presenting Author:**Aditi Kothiyal, Swiss Federal Institute of Technology Lausanne (EPFL), Switzerland

STEM (science, technology, engineering, and mathematics) domains involve the study of worldly entities, phenomena, and related concepts that are often beyond everyday human perception and interaction (e.g. microbes, chemical reactions). External representations (ERs; equations, graphs, physical and virtual models) of such entities, phenomena, and concepts are thus critical to sense-making, thinking, and learning processes in STEM. Recent developments in our understanding of how the mind works suggest that mental activities (e.g. sense-making, learning, thinking) are strongly embodied (body-based/mediated). We understand ERs, and the concepts they represent, through our bodily movements and interaction with them. Technology-enhanced learning environments become particularly relevant in such a theoretical stance, as they afford the generation of novel body-based/mediated ways to interact with STEM ERs, thus facilitating effective body-based learning and engagement with STEM concepts. This workshop will focus on how this new understanding of cognition can help us revisit the designs of technology-enhanced learning environments in STEM education, and how these intervention designs could be effectively grounded in new embodied learning theories. Specifically, we will try to answer the following two questions: (i) How to extract a design principle from theory?, and (ii) How to instantiate that design principle in a technology-enhanced learning environment (TELE)? We will do so using examples of a few evidence-based technology-enhanced embodied learning environments (and their pedagogical designs) popularly used in STEM teaching worldwide.

#### **Workshops I 3**

18 August 2021 13:30 - 14:30

Session Room 8

JURE 2021 Workshop

#### **SEM in Educational Research: Possibilities and Applications**

**Keywords:** Mixed-method Research, Motivation, Motivation and Emotion, School Effectiveness

#### **Interest group:**

Workshop introduces different possibilities of applying structural equation modeling (SEM) in educational research. The workshop aims to provide a broad picture of modeling applications in cross-sectional, longitudinal, variable-oriented and person-oriented analysis. Different possibilities will be presented by practical examples of educational research related to learning, motivation, well-being and school development. Participants will have an opportunity to discuss possible research questions which may be explored with SEM. After the workshop participants will be familiar with commonly used SEM methods and have an idea about the possible research questions related to their own research.

#### **SEM in Educational Research: Possibilities and Applications**

**Presenting Author:**Kaisa Haverinen, Tampere University, Finland; **Presenting Author:**Roosa Yli-Pietilä, Tampere University, Finland

Workshop introduces different possibilities of applying structural equation modeling (SEM) in educational research. The workshop aims to provide a broad picture of modeling applications in cross-sectional, longitudinal, variable-oriented and person-oriented analysis. Different possibilities will be presented by practical examples of educational research related to learning, motivation, well-being and school development. Participants will have an opportunity to discuss possible research questions which may be explored with SEM. After the workshop participants will be familiar with commonly used SEM methods and have an idea about the possible research questions related to their own research.

#### **Workshops I 4**

18 August 2021 13:30 - 14:30

Session Room 2

JURE 2021 Workshop

#### **Systematic Literature Review: How to plan, conduct and present the results**

**Keywords:** Meta-analysis, Qualitative Methods, Researcher Education, Student Learning

#### **Interest group:**

*If you wish to take part in this workshop, please download JASP (<https://jasp-stats.org/download/>) prior to this session* In depth understanding of a research field is essential in order to conduct impactful research. The abundance of literature as well as –in some cases- controversial results raise questions about the necessity or the direction of our future research. A systematic literature review provides an in depth understanding of the direction and the significance of previous findings in the field and is the first step when planning a research project. This workshop aims to familiarize participants with the process of conducting a systematic literature review. It offers an insight to systematic review methodology as well as the critical thinking skills necessary for planning and preparing a systematic literature review. During the workshop, participants will be introduced to conducting a systematic literature review with a step-by-step guide, starting from the formulation of the review question and moving to literature searching, deciding about a study's eligibility, data extraction as well as the basic principles of conducting a meta-analysis. Finally, key principles on how to communicate the results of a systematic review and meta-analysis will be discussed. The workshop will include a presentation, group discussion and exercises. No prior experience in conducting systematic literature review is required.

#### **Systematic Literature Review: How to plan, conduct and present the results**

**Presenting Author:**Triantafyllia Georgiadou, University of Western Macedonia, Greece

*If you wish to take part in this workshop, please download JASP (<https://jasp-stats.org/download/>) prior to this session* In depth understanding of a research field is essential in order to conduct impactful research. The abundance of literature as well as –in some cases- controversial results raise questions about the necessity or the direction of our future research. A systematic literature review provides an in depth understanding of the direction and the significance of previous findings in the field and is the first step when planning a research project. This workshop aims to familiarize participants with the process of conducting a systematic literature review. It offers an insight to systematic review methodology as well as the critical thinking skills necessary for planning and preparing a systematic literature review. During the workshop, participants will be introduced to conducting a systematic literature review with a step-by-step guide, starting from the formulation of the review question and moving to literature searching, deciding about a study's eligibility, data extraction as well as the basic principles of conducting a meta-analysis. Finally, key principles on how to communicate the results of a systematic review and meta-analysis will be discussed. The workshop will include a presentation, group discussion and exercises. No prior experience in conducting systematic literature review is required.

#### **Session C 1**

19 August 2021 09:00 - 10:00

Session Room 6

Roundtable

Teaching and Teacher Education

## Teaching and Teacher Education

**Keywords:** Emotion and Affect, In-service Teacher Education, Meta-analysis, Pre-service Teacher Education, Primary Education, Qualitative Methods, Secondary Education, Self-efficacy, Social Interaction, Teacher Professional Development, Workplace Learning

**Interest group:** SIG 11 - Teaching and Teacher Education

**Chairperson:** Sally Gutierrez, Philippines

### Co-designing an intervention promoting empathy use in primary school teachers

**Keywords:** Emotion and Affect, Primary Education, Social Interaction, Teacher Professional Development

**Presenting Author:** Vanessa Kurdi, University of Reading, United Kingdom; **Co-Author:** Cathy Creswell, University of Oxford, United Kingdom; **Co-Author:** Jessica Deighton, University College London & Anna Freud Centre, United Kingdom; **Co-Author:** Kou Murayama, University of Reading, United Kingdom

Teachers have the important task of helping children develop social and emotional skills, which are fundamental for emotion management, friendship development, and responsible decision-making, and impact well-being, motivation, and achievement in class. According to self-determination theory, all teaching practices supporting students' optimal development are based on empathy – the ability to take someone else's perspective, feel what they feel, and communicate that understanding (Ryan & Deci, 2017). While empathy is an essential skill for teachers, they receive little training on how they can develop and use it in their interactions with students (Berkovich, 2018). An empathy training workshop could benefit teachers, who would feel less stress and burnout from learning how to better support students with difficult emotions and behaviors, and students, who would have a model of positive social and emotional skills and feel supported and ready to learn in class (Reeve & Cheon, 2014). This project will aim to design an empathy training workshop in collaboration with elementary school educators (grades 3 to 6) through co-design groups and classroom observations, which will be tested in a feasibility study at a future stage. The participants of this roundtable will be invited to discuss the following questions: (1) What can be improved in this project to ensure the creation of a workshop well adapted to educators and useful to increase their use of empathy? (2) How can we best recruit, engage, and retain educators with different points of view in the co-design and observation steps of the project?

### A resources perspective on newly-qualified teachers: conceptual and methodological challenges

**Keywords:** Qualitative Methods, Secondary Education, Teacher Professional Development, Workplace Learning

**Presenting Author:** Julia van Leeuwen, Radboud Teachers Academy, Radboud University Nijmegen, Netherlands; **Co-Author:** Femke Geijssel, Radboud University Nijmegen, Netherlands; **Co-Author:** Harmen Schaap, Radboud University Nijmegen, Netherlands; **Co-Author:** Paulien Meijer, Radboud University Nijmegen, Netherlands

Induction programs for newly-qualified teachers (NQTs) are often driven by the dominant deficit perspective on NQTs. From this perspective, NQTs are mainly seen as those who still have a lot to learn, focusing on deficiencies that have to be overcome. We identify the need for an additional perspective: a resources perspective, in which NQTs are seen as important resources for schools. To study NQTs from a resources perspective, we introduce the concept of innovative professional potential that finds its place in a broader conceptual model. We argue that innovative professional potential can only emerge in the interaction between, on the one hand, the NQTs who are developing their professional identity through their work experiences, and on the other hand, the school ecology as the dynamic context that is part of these experiences. The aims of our research project are to understand how innovative professional potential manifests and develops in this interaction. In the round table session we would like to discuss our proposed model of innovative professional potential. Moreover, we would like to discuss the methodological challenges we foresee for the next part of our research project, in which we want to study innovative professional potential in its full depth and from the perspective of multiple actors in the school ecology.

### Promoting Teacher Self-Efficacy. A systematic review and meta-analysis on intervention studies.

**Keywords:** In-service Teacher Education, Meta-analysis, Pre-service Teacher Education, Self-efficacy

**Presenting Author:** Janina Täschnner, Technical University of Munich (TUM) & ZIB (Centre for International Student Assessment), Germany; **Co-Author:** Doris Holzberger, Technical University of Munich (TUM), Germany; **Co-Author:** Theresa Dicke, Australian Catholic University | Institute for Positive Psychology & Education, Australia

A substantial amount of research has emphasized the importance of teacher self-efficacy for a successful and healthy teaching career (Aloe et al., 2014; Zee & Koomen, 2016). However, it is less clear, how teacher self-efficacy can be effectively promoted. Bandura (1997) describes mastery experiences, vicarious experiences, social persuasion, and physiological reactions as the four sources of self-efficacy beliefs. Divergent to the prediction that mastery experiences are the most influential source, some intervention studies *with vicarious experiences* show similar or even slightly higher effect sizes than studies only targeting mastery experiences (e.g., Çelebi et al., 2014, Gold et al., 2017). Further, existing research syntheses state a lack of research on the sources of self-efficacy in teacher self-efficacy promotion (Klassen et al., 2011; Morris et al., 2017). The present research synthesis aims to answer two main research questions highly relevant for researchers and practitioners in teacher education: (1) Can interventions in teacher education and teacher training promote teachers' self-efficacy? (2) How do the four sources of self-efficacy affect the intervention effects? Other theoretically grounded moderators as the sample's career stage will be checked, too. The authors developed a coding scheme for Bandura's sources in teacher training and analyzed quantitative intervention studies with at least two measurement points. The research synthesis provides a comprehensive overview of current teacher interventions and their implementation of Bandura's sources. The results will contribute to the discussion on the theoretical foundations of teacher self-efficacy research, as well as ideas for practical implementations in teacher education.

## Session C 2

19 August 2021 09:00 - 10:00

Session Room 5

Roundtable

Assessment and Evaluation, Teaching and Teacher Education

### Best of JURE Roundtable Session

**Keywords:** Competencies, Conversation/Discourse Analysis, Educational Policy, Mixed-method Research, Quantitative Methods, School Effectiveness, Survey Research, Teacher Effectiveness, Teacher Professional Development, Teaching/Instruction

**Interest group:** SIG 18 - Educational Effectiveness and Improvement

**Chairperson:** Valentina Reitenbach, Germany

### Does the impact of modeling approaches on the effects of teaching quality vary across countries?

**Keywords:** Quantitative Methods, Survey Research, Teacher Effectiveness, Teaching/Instruction

**Presenting Author:** Benjamin Herbert, DIPF | Leibniz Institute for Research and Information in Education, Germany

In order to adequately investigate the effects of teaching on student outcomes, it is necessary to consider students' intake with regard to the respective outcome. Current educational research publications typically use one of the following two modeling approaches: (M1) student intake is included at the individual level only, (M2) it is included both at the individual and class level. Mistakenly, in many cases both approaches are used for the same research questions and their results are interpreted identically. So far, the corresponding modelling effects have only been examined in national samples. This study provides first insights into whether the effects differ across countries. The two modeling approaches are compared on the basis of longitudinal student survey and test data from the TALIS Video Study. Separate models are estimated for three aspects of teaching quality (cognitive activation, disruptions and student teacher relationship), three types of student outcomes (achievement, interest and self-efficacy) and four countries (England, Germany, Japan and Shanghai). For Shanghai, Japan, and England, several aspects of teaching quality have effects on student outcomes at the class level when students' intake is controlled only

at the individual level, but many of these effects are no longer significant when the previous class average is controlled for. In England and Japan most effects on student interest and self-efficacy are significant under both modeling approaches, but weaker when also controlling for students' intake at class level. An exception is the effect of cognitive activation on self-efficacy in Japan, which gets stronger. These findings highlight the importance of informed decisions when selecting a research questions as well as the corresponding modelling approach as patterns of teaching effects may be different for individual countries depending on the approach used.

#### **Measuring effective teaching from three perspectives: school inspectors, students, and teachers**

**Keywords:** School Effectiveness, Teacher Effectiveness, Teacher Professional Development, Teaching/Instruction

**Presenting Author:**Hannah Bijlsma, University of Twente, Netherlands

Little is known about how student perceptions of the teaching quality in a lesson relate to the teaching quality perceptions of teachers and school inspectors of the same lesson. In a collaborative project with the Dutch School Inspectorate, the three perspectives, measured by means of the digital Impact! tool, will be studied to obtain a rich picture of teaching quality in Dutch primary and secondary schools and in schools for special educational needs. Including the student perspective in the assessments provided an opportunity to clarify how students from different achievement levels perceive the quality of their lessons. Questions that will be discussed with the audience during the round table session are related to the validity and reliability of the three different measures of teaching quality, how they might differ per educational context and about aspects of effective teaching that are proven to be effective for student learning.

#### **Adolescent Electronic Health Literacy In the Context of Education Policies and Pedagogical Practices**

**Keywords:** Competencies, Conversation/Discourse Analysis, Educational Policy, Mixed-method Research

**Presenting Author:**Hadil Elsayed, University of Gothenburg, Sweden

Updated AbstractBackgroundHealth literacy (HL) is a significant determinant of health status. Adolescents, who may have a higher propensity for obtaining information from digital sources may not always be capable of critically evaluating health related information, making electronic health literacy (EHL) an issue in that population. Schools have been recommended as points of intervention for improving HL/EHL. The role of education in promoting HL should be contextualized within national/international policies. In Sweden, the concept of HL is tacitly addressed within school-based health promotion work. Although some adolescents in Sweden have lower EHL compared to their peers in other northern countries, the overall level of EHL among adolescents in Sweden remains unknown.Aim and methodsThis project aims to explore HL/EHL among high school students in relation to educational policies, institutional frameworks and pedagogical practices. It comprises four sub-studies, the first oriented towards analyzing policy discourse, the second and third exploring policy enactment and the fourth assessing EHL levels among students (using the Swedish version of the e-health literacy scale (eHEALS), a validated eight item measure with a high level of internal consistency) and relating them to relevant institutional as well as individual attributes. A mixed method design will be employed. Qualitative data will be generated using methods such as, interviews with stake holders, text analysis and organizational ethnography. Quantitative data will be derived from the responses to eHEALS which will be summated to indicate the levels of EHL, as well as from school records where appropriate.Findings The prospective results would allow for the assessment of EHL levels among students while simultaneously exploring their relation to various individual, group and organizational attributes. The findings may reveal tensions between policy rhetoric and professional practices. The results would be meaningful for action on both the national and the supra national level.

#### **Session C 3**

19 August 2021 09:00 - 10:00

Session Room 3

Roundtable

Teaching and Teacher Education

#### **Teacher Professional Development**

**Keywords:** Assessment Methods and Tools, Attitudes and Beliefs, Competencies, Educational Psychology, Higher Education, Pre-service Teacher Education, Reflection, Teacher Professional Development, Teaching/Instruction

**Interest group:** SIG 11 - Teaching and Teacher Education

**Chairperson:** Pihla Rautanen, Finland

#### **Fostering Pre-service Teachers' Assessment Competences in Simulations with Two Types of Prompts**

**Keywords:** Educational Psychology, Higher Education, Pre-service Teacher Education, Teacher Professional Development

**Presenting Author:**Michael Nickl, Technische Universität München, Germany; **Co-Author:**Daniel Sommerhoff, Leibniz Institute for Science and Mathematics Education, Germany; **Co-Author:**Elias Codreanu, Technische Universität München, Germany; **Co-Author:**Stefan Ufer, Ludwig-Maximilians-Universität (LMU), Germany; **Co-Author:**Tina Seidel, Technische Universität München, Germany

Educational assessments are indispensable in teachers' professional practice. They are referred to as the process and the result of assessing learning-relevant aspects in situations related to learning. Since good assessment competences are considered important to reach appropriate educational decisions, fostering these competences is an important goal within teacher education. Although professional knowledge has been found to play an important role in assessment, learning to apply this knowledge in authentic situations is a key step when developing assessment competences. Past research argues that gaining experiences in situations that are typical for teachers' professional practice is promising to practice and foster assessment competences. Video-based simulations can be an efficient way to achieve this.

We will present a conceptual framework that systematizes factors relevant for fostering assessment competences in simulation-based environments (individual learning prerequisites, instructional support, context), providing a basis for the further discussion. Scaffolding by prompts, i.e. additional textual guidance during the simulation that provides help on how to cope with the assessment task, is one example of instructional support and will be spotlighted in the discussion. Prompts have proven to be an effective measure to foster assessment competences.

The differentiation between content-related and process-related prompts is introduced and leads to the discussion's main topic: Design principles of these types of prompts. It is discussed how both prompt types could be adapted to specific simulation-based environments to effectively foster pre-service teachers' assessment competences within the simulation and under what circumstances (like individual learning prerequisites) what prompt type is more beneficial for learning.

#### **Lesson Planning Competence: A Systematization of Empirical Studies**

**Keywords:** Assessment Methods and Tools, Competencies, Teacher Professional Development, Teaching/Instruction

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

Being able to plan lessons professionally is regarded a core competence of teachers. Against this backdrop, empirical studies dealing with the measurement or development of lesson planning competence start to be of increasing interest in educational research. As lesson planning is quite complex, studies deal with various aspects of it and use different methodological approaches. In order to provide a structured overview of theoretical approaches and measurements of lesson planning competence, a systematic review appears to be reasonable. Therefore, the objective of this research is a systematization of empirical studies as well as support measures dealing with lesson planning competence. Having searched the literature in three databases, the full-text screening process of the search results (n=255) is still in progress. The so far preliminary eligible studies shall be further structured according to certain criteria for the synthesis of the systematic review. As this is research in progress, the preliminary criteria - such as the theoretical frameworks - shall be presented and discussed at the conference.

#### **Who is willing to reflect? - A matter of student teachers' professional competence or personality?**

**Keywords:** Attitudes and Beliefs, Competencies, Reflection, Teacher Professional Development

**Presenting Author:** Rene Staab, DIPF Leibniz Institute for Research and Information in Education, Germany

Reflecting on problems of pedagogical practice has become an essential part of teacher training. Therefore, student teachers' willingness to reflect is crucial to the initiative process of reflective practice. Since the so called reflective turn (Schon, 1991), there has been a lot of research on the subject, yet the field lacks coherence in theoretical foundations and empirical approaches (Beauchamp, 2006). Interindividual differences in reflection are either attributed to modifiable aspects such as teachers' belief or knowledge (sometimes referred to as professional competence) or stable personality traits (e.g. teachers' openness). This study explores student teachers' willingness to engage in reflective practice as a function of their professional competence and/or personality traits. It draws on data of about 400 German students comprising self-reporting scales as well as a test regarding their professional knowledge. The findings show that aspects of professional competence (enthusiasm for teaching and epistemic beliefs) outweigh stable personality traits in predicting student teachers' willingness to reflect on problems.

#### **Session C 4**

19 August 2021 09:00 - 10:00

Session Room 8

Roundtable

Higher Education, Learning and Social Interaction, Lifelong Learning

#### **Workplace Learning and Professional Development**

**Keywords:** Collaborative Learning, Comparative Studies, Content Analysis, Doctoral Education, Ethnography, Informal Learning, Mixed-method Research, Researcher Education, Social Interaction, Technology, Video Analysis, Workplace Learning

**Interest group:** SIG 14 - Learning and Professional Development

**Chairperson:** Sebastian Anselmann, University of Education Schwäbisch Gmünd, Germany

#### **Applying digital ethnography to better understand technology-enhanced informal workplace learning**

**Keywords:** Ethnography, Informal Learning, Technology, Workplace Learning

**Presenting Author:** Anne Karhapää, University of Jyväskylä, Finland; **Co-Author:** Raija Hämäläinen, University of Jyväskylä, Finland; **Co-Author:** Johanna Pöysä-Tarhonen, University of Jyväskylä, Finland

Technology can play a significant role in enabling informal workplace learning with various work tools and resources. However, there is still little empirical research on informal learning in this context, and especially more understanding about how technology can support informal learning processes is needed. Informal learning is often difficult to perceive. This study applies digital ethnography as methodology to reveal new understanding about technology-enhanced informal workplace learning. Ethnographic approach can provide an opportunity to document and understand how technology is used and how it affects informal workplace learning. This research adapts digital ethnography to study how digital technology is used in informal workplace learning and how it can support informal workplace learning processes. The study aims to achieve a holistic understanding of how informal learning processes, work practices and practices of technology use are intertwined in knowledge work at one workplace. The research is conducted online, utilising several data-collection strategies: observation, interviews, diaries, and documents to examine the activities and meanings associated with the use of digital technology in informal workplace learning. This presentation introduces the research design, particularly presenting the ethnographic methodology applied to investigate the practices of technology use in informal workplace learning. Digital ethnography offers tools to collect and manage data, but also changes the basic concepts and practices of ethnography. The field in this study is constructed from different online sites and fieldwork consists of engaging with these digital spaces, platforms, and meetings, as well as interacting online with the participants.

#### **Expertise in Science - The relationship between social networks and research performance**

**Keywords:** Content Analysis, Doctoral Education, Researcher Education, Social Interaction

**Presenting Author:** Agnes Cichy, University of Regensburg, Germany; **Co-Author:** Hans Gruber, University of Regensburg, Germany

In science, research performance is an indicator for expertise. The concept includes research activity (practice) and performing (making the research visible). Highly successful researchers attribute their success in part to apprenticeship with supportive mentors, collaboration with experts in the past and a central position in their scientific network. Little is known so far about practice activities and if other "persons in the shadow" support research performance from the perspective of doctoral students. The aim of this study is to examine how social networks of doctoral students function as powerful learning environments and how they contribute to their research performance. It raises the following questions: 1) To what extent do social networks contribute to the development of research activities? 2) To what extent do social networks contribute to the performing of research? The sample consists of n= 20 doctoral students who were part of the same scientific community and have collaborated with experts who are central (n=10) or peripheral (n=10) in the community. A mixed-method egocentric network analysis, combined with data from semi-structured interviews will be conducted. First, structure and size of the social network will be identified. Afterwards, practice on research activities and performing of research will be analysed and the contribution of nominated persons to the practice of these activities. Finally, the participants will describe how the experts contributed to their personal, academic, professional and intellectual development. Qualitative content analysis will identify categories in which afterwards the contribution of the most important actors will be rated. A group-comparison will describe differences in the size and structure of the social network in regard of the experts' centrality. The results of this study should contribute to a deeper understanding how doctoral students develop their scientific expertise and how their social network contributes to this process. There are no results yet.

#### **Individual and Collective Deliberate Practice in Popular Music Bands**

**Keywords:** Collaborative Learning, Comparative Studies, Mixed-method Research, Video Analysis

**Presenting Author:** Simon Schmidt, Universität Regensburg, Germany; **Co-Author:** Hans Gruber, University of Regensburg, Germany

Abstract (244 w)

Research shows that deliberate practice strategies are crucial for skill development of experts in music. Most research addresses individual practice processes. Much less is known about collective practice processes (ensemble rehearsals) and how they affect skill development at different levels. In addition, previous research on music expertise mostly focused on individual practice in classical music tradition whereas younger genres like popular music are widely neglected. This project therefore aims to investigate expertise development in popular music. It addresses the interplay of collective and individual practice and its effects on performance both on an individual and collective level by contrasting different professional levels of musicians (semi-professionals, professionals). During ensemble rehearsal, elements of interactive mutual assessment such as giving feedback and correction of mistakes contribute to the quality of collective practice. Collective practice patterns will be investigated with video-recordings and semi-structured interviews. Questionnaire and interview data will be used to assess individuals' attributes and practice patterns. A mixed-method strategy will combine collective data and individual data in order to uncover collective deliberate practice patterns and its interdependence with individual deliberate practice. Video data will be used for a social network analysis (SNA) in order to investigate interactive mutual assessment during collective practice. The results should contribute to unravel the process of "collective deliberate practice" in popular music ensembles. They should provide deeper insights into inter-individual relations in group processes in the domain of music and their contribution to the development of expert music performance in general.

**Keywords:** collective practice, correction of mistakes, feedback, individual practice, music practice

#### **Session C 5**

19 August 2021 09:00 - 10:00

Session Room 1

Roundtable

### **Citizenship Education**

**Keywords:** Citizenship Education, History, Primary Education, Qualitative Methods, Social Interaction, Student Learning

**Interest group:** SIG 10 - Social Interaction in Learning and Instruction

**Chairperson:** Sarah Straub, Austria

### **Mentoring Inclusive Citizenship Education**

**Keywords:** Citizenship Education, Primary Education, Qualitative Methods, Social Interaction

**Presenting Author:** Sarah Straub, University of Vienna - Centre for Teacher Education, Austria

This round table presentation contributes to the conference topic from an inclusive citizenship education perspective, focusing on learning processes through social interaction of primary school children with migration or refugee backgrounds and teacher candidates in Austria. Integration and inclusion strategies are examined with a focus on how these children can become active citizens in democratic societies. 1:1 mentoring serves as the empirical research example to look at the learners and teachers at the same time in order to identify learning processes for inclusive citizenship education. The concept of inclusive citizenship education provides the frame for analysing the mentoring relationship as a tool for supporting children to become active citizens in democratic societies. The aim of this research is to look for educational moments in 1:1 mentoring (case study) that are characterised by a transformation of the individual as a learning experience.

### **Teaching and learning of historical-citizen competence in vulnerable contexts students**

**Keywords:** Citizenship Education, History, Qualitative Methods, Student Learning

**Presenting Author:** Paula Neira, Pontificia Universidad Católica de Chile, Chile

The relationship between Historical Thinking (HT) and Citizenship Education (CE) has been taken for granted at a theoretical level in the field of teaching and learning History and CE. Even when literature assumes this relationship and Chilean public educational policy has drawn up curricular guidelines that invite the development of knowledge, skills and attitudes of HT and CE, in practice, Chilean students have a low level of historical and civic literacy according to what reported by institutions such as the Education Quality Agency, SERVEL (electoral service) and studies such as SIMCE (Education Quality Measurement System) or ICCS (International Civic and Citizenship Education Study). These studies also show a socioeconomic gap between students in Chile. These data allow to reflect on the relationship between HT and CE and assume difficulties in teaching and learning both. In this context, based on a qualitative methodology and a phenomenological approach, this project seeks to analyze the perspectives of teachers and students from vulnerable contexts on history and citizenship and their experience in the teaching and learning process of HT and CE knowledge, attitudes and skills. Teachers from different vulnerable schools of the Metropolitan Region will be instructed in a teaching model of historical-citizen competence to later implement it in their classroom. In-depth students and teachers' interviews, classroom observations and a historical-citizen competence test for students will be carried out in order to analyze the aforementioned processes based on the thematic analysis of the data collected.

### **Session D 1**

19 August 2021 10:15 - 11:15

Session Room 7

Poster Presentation

Higher Education, Teaching and Teacher Education

### **Best of JURE Poster Session**

**Keywords:** Case Studies, Competencies, Developmental Processes, Higher Education, Mixed-method Research, Pre-service Teacher Education, Qualitative Methods, Self-efficacy, Student Learning, Survey Research, Video Analysis, Workplace Learning

**Interest group:** SIG 11 - Teaching and Teacher Education

**Chairperson:** Hoda Ashjari, University of Gothenburg, Sweden

### **Inside the 'black box': Advancing insight in learning during mentoring in teacher education**

**Keywords:** Mixed-method Research, Pre-service Teacher Education, Student Learning, Workplace Learning

**Presenting Author:** Ine Ophalvens, Ghent university, Belgium; **Co-Author:** Hanne Tack, Ghent University, Belgium; **Co-Author:** Ruben Vanderlinde, Ghent University, Belgium

This poster presentation is based on a recently started research project on mentoring in teacher education. Broadly speaking, mentoring is defined as a *dyadic relationship between a more experienced mentor teacher, and a less experienced student teacher* (e.g. Kram, 1985). As a form of workplace learning (e.g. Hennissen, Crasborn, Brouwer, Korthagen, & Bergen, 2008), learning through mentoring is considered to be an essential part of teacher education. This means that mentor teachers have a crucial role in supporting student teachers' learning during their teaching practicum (e.g. Geldens, 2007; Hennissen et al., 2008). However, until today, empirical knowledge on mentor teachers is scarce (Bozeman & Feeney, 2007; Colley, 2003) and mentor teachers often remain 'hidden' (Livingston, 2014, p. 219) in the debate on the quality of teacher education (Cochran-Smith & Zeichner, 2006). In particular, the learning through mentoring has been overlooked, and can be considered as a 'black box' (Mena, Hennissen, & Loughran, 2017). To advance theoretical and empirical understanding in mentoring in the context of teacher education, this research project puts four empirical studies forward. Study 1 explores this hidden professional group, by conducting a large-scale study on mentor teachers' preferred supervisory roles and their professional vision. Study 2 assesses the experienced support through a large-scale cross-sectional survey study with 300 mentor-student teacher dyads. Study 3 studies the observed support and learning processes through mentoring by means of a video-based observation study with 30 mentor-student teacher dyads. Study 4 assesses the impact of mentoring on student teachers' professional identity by means of a follow-up study with 30 mentor-student teacher dyads. This project implies pioneering contributions to a more comprehensive theory on mentoring, and allows taking empirical studies on mentoring to a next level.

### **Developing first-year students' self-efficacy in a digital dominated semester: An intervention study**

**Keywords:** Developmental Processes, Higher Education, Self-efficacy, Survey Research

**Presenting Author:** Ronja Bükler, Paderborn University, Germany; **Co-Author:** Tobias Jenert, Paderborn University, Germany

Starting with the summer term of 2020, most Higher Education (HE) programmes in Germany could only be offered digitally due to the Corona pandemic. For some students, this situation can be problematic for various reasons such as technical problems or psychosocial phenomena like anxiety and social isolation. Resulting from the limited opportunities for social integration during the Corona pandemic, first-year students in particular need to be supported in coping with the challenges of HE. Self-efficacy is an important personal resource that helps to manage subjective stress and to deal with challenges that arise from a situation such as distance learning. We present a study that investigated the impact of an intervention to increase self-efficacy in a distance setting. The intervention intended to influence the evaluation process of challenging situations through self-affirmation. In general, gender-specific differences can already be identified at the start of studies. For example, male students start their studies with higher levels of self-efficacy, both academic and digital media-related, whereas female students show a higher intrinsic motivation but also study-related anxiety. With a pre-post comparison, we found that study-related anxiety increases before the examination phase. Using a latent class analysis, we divided the sample into two subgroups based on self-efficacy. The intervention developed to strengthen the self-efficacy was effective for the subgroup with lower self-efficacy. Thus, the study indicates that an intervention should address a specific target group as depending on the intervention design, it may work for some students and not for others. Furthermore, our findings affirm that relatively 'small' interventions can support disadvantaged students in mastering the transition to HE. Academically, our study contributes to the growing body of research investigating the interaction between personal and contextual diversity in education by combining longitudinal and typological (latent class) analysis.

## **Potentials and pitfalls of using a video-based approach to competency modeling**

**Keywords:** Case Studies, Competencies, Qualitative Methods, Video Analysis

**Presenting Author:**Lara Gerhardts, University of Paderborn, Germany

Given that Web searching competency is a basic prerequisite for lifelong self-regulated learning and active citizenship in a digitalised society, more importance should be attached to it both in terms of curriculum development and lesson design. Generally speaking, didactical decision-making benefits from well-founded competency models providing an accurate overall picture of the respective learning area. Reviewing the literature, one can find some scientific publications on modeling the broader field of digital information literacy for competency testing. However, a research gap can be identified as regards more specific and in-depth modeling of Web searching competency, which seems differentiated enough to inform curricular and instructional decisions at secondary school level. While competency modeling for testing purposes relies on statistical procedures to achieve a high level of abstraction, didactically oriented competency modeling strives for more granularity. Accordingly, a different methodical approach is needed. This "methods poster" focuses on evaluating the potentials and pitfalls of a video-based qualitative approach to data collection, which had been specifically developed to capture all the components of Web searching competency that seem to be relevant in secondary school. To this end, a combination of screencasting, user videography, and think-alouds was triangulated with video-based stimulated recalls and semi-structured qualitative interviews. Triangulating different methods of data collection proved adequate to gather both wide-ranging and profound information on the challenges secondary school students are facing in the course of a typical Web search process. However, it has to be considered that qualitative data collection is all the more time-consuming when combining different methods. Qualitative content analysis can be considered an ideal next step to reduce data complexity for further data analyses.

### **Session D 2**

19 August 2021 10:15 - 11:15

Session Room 6

Poster Presentation

Motivational, Social and Affective Processes, Teaching and Teacher Education

#### **Teaching and Teacher Education**

**Keywords:** Achievement, Attitudes and Beliefs, Competencies, Distributed Cognition, Educational Policy, In-service Teacher Education, Mathematics, Pre-service Teacher Education, Primary Education, Qualitative Methods, Quantitative Methods, Student Learning, Teacher Professional Development

**Interest group:** SIG 11 - Teaching and Teacher Education

**Chairperson:** Valentina Reitenbach, Germany

#### **Requirements for the digital competencies of teachers in context of the new curriculum Media and ICT**

**Keywords:** Competencies, Primary Education, Qualitative Methods, Teacher Professional Development

**Presenting Author:**Marina Grgic, Pädagogische Hochschule Bern, Switzerland

This study, implemented within a research project financed by the Swiss National Science Foundation, investigates the question which digital skills are required and promoted among teachers in primary Education in the context of the new curriculum "Media and ICT" in Switzerland. Analysis of documents reporting about the curriculum as well as expert interviews with stakeholders involved in the implementation are used to answer the research question. In terms of triangulation, the findings are combined in a competence model. The results show that the demands on teachers' digital literacy overlap with the pupils' competencies in the curriculum. In addition, teachers should be able to rethink and redesign their lessons didactically and methodologically in relation to the curriculum. The findings of the research project provide valuable evidence for the future design of teacher training and further training concepts.

#### **Digital Competence in Teacher Education Curricula – Indications for Teacher Educator Knowledge?**

**Keywords:** Competencies, Distributed Cognition, Educational Policy, Pre-service Teacher Education

**Presenting Author:**Ilka Nagel, Østfold University College / University of Oslo, Norway

The aim of this qualitative study is to contribute to the discourse on teacher educators' knowledge by focusing on the impact of digitalisation. To explore how digital competence is addressed in local curricula and what is expected of teacher educators in terms of preparing student teachers for epistemic changes, I thematically analysed program descriptions, course descriptions and plans for school practicum from six Norwegian teacher education institutions. The findings show that teacher educators are expected to focus on the (pedagogical) use of digital tools. However, they are also supposed to teach student teachers how to foster pupils' digital skills and digital responsibility, address digitalisation's influences on society and culture and educational subjects' contents and practices. The findings imply that teacher educators need an understanding of digitalisation's implications for epistemology to foster student teachers' digital competence and transformative digital agency.

#### **Classroom perceptions of students in differing ability levels in mathematics**

**Keywords:** Achievement, Mathematics, Quantitative Methods, Student Learning

**Presenting Author:**Freya Winterle, Leibniz Institute for Science and Mathematics Education (IPN) Kiel, Germany; **Co-Author:**Nele Kampa, University College of Teacher Education, Austria

In our study, we investigate the classroom perception of students with differing ability levels in mathematics classrooms. Socioeconomic and migration background are included as explanatory variables. We hypothesise that classroom perception follows a U-distribution with students of higher ability levels holding positive classroom perceptions and students of lower ability levels holding less positive classroom perceptions. Our data stems from two large-scale assessments on the national educational standards in Austria in 4th grade (n=73 780, 2961 schools) and 8th grade (n=72 704 students, 1 386 schools). We compare classroom perception and ability levels with multi-group comparison and regress the ability levels on the different classroom perception dimensions. We additionally include socioeconomic and migration background as well as their interaction with the ability levels into the prediction of classroom perception. By confirming our hypotheses, we will substantiate former research showing that students outside average ability levels might not feel adequately supported in their classrooms. As it would show that goals in the form of standards are not met, our results will also have practical implications regarding the current postulation for more inclusive education. At the conference, we will present our future results.

#### **Portuguese Teachers' Conceptions about Grade Retention in 2nd Grade**

**Keywords:** Attitudes and Beliefs, Educational Policy, In-service Teacher Education, Pre-service Teacher Education

**Presenting Author:**Natalie Santos, ISPA-Instituto Universitário, Portugal; **Co-Author:**Vera Monteiro, ISPA- Instituto Universitário, Portugal

This study aimed to investigate what are the conceptions of elementary school pre-service and in-service teachers about retention in the 2<sup>nd</sup> grade. One hundred thirty-seven elementary school teachers (58.1% of the total sample) and 99 pre-service teachers (41.9% of the total sample), aged between 19 to 65 years (M=38.0, SD=13.0), and mostly female (96.2%) responded an online questionnaire. This questionnaire evaluated teachers' general conceptions about the effectivity of school retention in 2<sup>nd</sup> grade, about its socio-affective effects, and their attitudes toward early retention. The results show that teachers' beliefs are varied. Most teachers indicated neutral opinions about the effectiveness of retention but agreed that it is more effective when it occurs at the beginning of schooling. Correlation analysis showed that teachers' conceptions were related to their beliefs about colleagues' conceptions of grade retention. This relation suggests that teachers believe that their colleagues share their conceptions. Reading about grade retention effects on academic journals did not seem to be associated with teachers' conceptions. MANOVA results showed that in-service teachers have more positive conceptions of grade retention than teachers who are still in the process of training. MANOVA analyses also indicate that teachers who in the past retained more 2<sup>nd</sup>-grade students are those who consider that this practice has few socio-affective effects, and that should occur at the beginning of schooling. The retention rate is quite high among the participants (59.9% of teachers indicated that they had retained at least one student in the last year they taught 2<sup>nd</sup> Grade). Teachers' positive beliefs have an impact on their grade

retention practices, leading them to ignore the educational policies and scientific recommendations that endorse the exceptional use of this practice.

### Session D 3

19 August 2021 10:15 - 11:15

Session Room 10

Poster Presentation

Higher Education, Learning and Instructional Technology, Learning and Social Interaction

#### E-Learning and Online Learning

**Keywords:** Artificial Intelligence, Cognitive Skills, Collaborative Learning, Doctoral Education, E-Learning/Online Learning, Educational Technology, Higher Education, Learning Analytics, Learning Technologies, Social Interaction, Teaching/Instruction, Technology

**Interest group:** SIG 07 - Technology-Enhanced Learning And Instruction, SIG 10 - Social Interaction in Learning and Instruction

**Chairperson:** Madeleine Strobel, University of Glasgow, UK, Sweden

#### Towards Automated Analysis and Visualization of Cognitive Presence in Online-based Learning

**Keywords:** Artificial Intelligence, Cognitive Skills, E-Learning/Online Learning, Teaching/Instruction

**Presenting Author:** Verena Dornauer, Institute of Medical Informatics, UMIT - Private University of Health Sciences, Medical Informatics and Technology, Hall in Tirol, Austria; **Co-Author:** Lisa-Maria Norz, Institute of Medical Informatics, UMIT - Private University of Health Sciences, Medical Informatics and Technology, Hall in Tirol, Austria; **Co-Author:** Michael Netzer, Institute of Medical Informatics, UMIT - Private University of Health Sciences, Medical Informatics and Technology, Hall in Tirol, Austria; **Co-Author:** Eva Kaczko, Institute of Medical Informatics, UMIT - Private University of Health Sciences, Medical Informatics and Technology, Hall in Tirol, Austria; **Co-Author:** Werner Hackl, Institute of Medical Informatics, UMIT - Private University of Health Sciences, Medical Informatics and Technology, Hall in Tirol, Austria; **Co-Author:** Elske Ammenwerth, Institute of Medical Informatics, UMIT - Private University of Health Sciences, Medical Informatics and Technology, Hall in Tirol, Austria

**Background:** Cognitive presence is one construct of the Community of Inquiry framework and is important for how students can learn especially in online-based settings. Earlier research in the field of automated analysis of cognitive presence was done on student postings in the English and the Portuguese language but real-time analyses and analyses of the German language are still lacking. **Aim of Research:** This work aims at establishing automated analyses of cognitive presence in the German language using various online-learning traces and visualization of the results via a dashboard. Further, we will evaluate the acceptance of the dashboard by teachers. **Methods:** 1.522 meaningful units out of 1.147 students' postings of an online-based course in the German language in "Software Quality Engineering" serve as the gold standard for automated analyses of cognitive presence. **Preliminary Results:** Results of the manual quantitative content analyses are available with a high amount of the last phase of cognitive presence (resolution) compared to earlier studies. First results of the K-Nearest Neighbor algorithm are available for classification of students' postings into cognitive presence phases. An overall accuracy after standardized scaling, SMOTE resampling and 10-fold Cross-validation of 0.76 was achieved with Precision 0.75, Recall 0.76, and F1-Score 0.74. A specific up- and down-sampling method (SMOTEENN) showed higher scores up to > 0.90 by denoising the dataset. Further steps will include application of Support Vector Machine and Random Forest algorithm for the automated classification, and longitudinal analyses to gain insights into the temporal dimension of learning. A Design Thinking Workshop will be held with the planned users for the automated visualization of cognitive presence. **Conclusion:** Results could help teachers to reflect and adapt their teaching method. In the best case, a tool for teachers, which shows that an immediate teaching reaction is necessary, will result.

#### Towards an automatic measurement of social presence in online learning communities

**Keywords:** Collaborative Learning, E-Learning/Online Learning, Learning Analytics, Social Interaction

**Presenting Author:** Lisa-Maria Norz, Institute of Medical Informatics, UMIT - Private University of Health Sciences, Medical Informatics and Technology, Hall in Tirol, Austria; **Co-Author:** Verena Dornauer, Institute of Medical Informatics, UMIT - Private University of Health Sciences, Medical Informatics and Technology, Hall in Tirol, Austria; **Co-Author:** Eva Kaczko, Institute of Medical Informatics, UMIT - Private University of Health Sciences, Medical Informatics and Technology, Hall in Tiro, Austria; **Co-Author:** Werner Hackl, Institute of Medical Informatics, UMIT - Private University of Health Sciences, Medical Informatics and Technology, Hall in Tiro, Austria; **Co-Author:** Michael Netzer, Institute of Medical Informatics, UMIT - Private University of Health Sciences, Medical Informatics and Technology, Hall in Tiro, Austria; **Co-Author:** Elske Ammenwerth, Institute of Medical Informatics, UMIT - Private University of Health Sciences, Medical Informatics and Technology, Hall in Tiro, Austria

**Background:** Social presence, as part of the Community of Inquiry Framework (CoI), i.e. social exchange and the perception of others in online environments, serves as an essential factor for successful online learning. Due to the importance of social components in learning, it seems necessary to provide teachers with information regarding social presence in ongoing online courses. However, up to now, it is not possible to measure social presence in real-time. **Purpose:** This poster aims to analyse which available data in learning management systems (Log Data, Social Network Data) could serve as indicators for the real-time measurement of Social Presence in online learning. **Methods:** As a gold standard, we created a German codebook and manually coded an online course with 1,147 students' postings (from n=15 students). Then, we selected measures from social network analysis (SNA) and indices derived from log data in online learning management systems as potential indicators for social presence. **Planned Steps:** In the next planned step, we will perform a path analysis to analyse which of these indicators can measure Social Presence in real-time. We will also perform a structural analysis of social networks during a six-week online course duration to analyse how social presence is developing over time. **Conclusion:** Results should help teachers keep an overview of social presence, give appropriate feedback, and enforce social components when needed in ongoing online courses.

#### Implementing Conditions of Hybrid Teaching and Learning Environment in Cambodian Higher Education

**Keywords:** Doctoral Education, E-Learning/Online Learning, Educational Technology, Higher Education

**Presenting Author:** sopheap kaing, University of Fribourg, Switzerland

The purpose of this article is to scrutinize and interpret implementing conditions of Hybrid Teaching and Learning Environment (HTLE) in Cambodian higher education, to differentiate these conditions according to the learning design (Boud & Prosser, 2002) of these environments and to evaluate their effects on the development of 21st-century skills of the students. To describe implementation conditions, this research integrates and enhances Depover and Strebelle (1997) and Ely (1999) a systemic model of university innovation process. Main conditions are related to intrants, processes (adoption phase, implementation phase, and routinization phase) and ongoing supports by meso-systems and macro-system. Concerning the learning design, this research employs the HY-SUP typology differentiating six types of HTLE (Deschryver & Charlier, 2012) and to evaluate effects, this research adopts the systemic model developed by Charlier, Cosnefroy, Jézégou and Lameul (2015). There were 20 Cambodian lecturers participating through online semi-structured interviews and their 106 students through online survey. The data analysis of this mixed methods research uses MAXQDA 2020. The preliminary results have shown that all HTLE were student-centred and the main implementation conditions were mostly related to individual characteristics of the lecturer even though they received less support from their institution. Eventually, student's expressed mainly positive effects on their 21st-century skills.

#### Teachers' views on digital personalized learning: an analysis of focus group interviews

**Keywords:** E-Learning/Online Learning, Educational Technology, Learning Technologies, Technology

**Presenting Author:** Rani Van Schoors, KU LEUVEN, Belgium; **Co-Author:** Kamakshi Rajagopal, KU LEUVEN, Belgium; **Co-Author:** Stefanie Vanbecelaere, KU Leuven, Belgium; **Co-Author:** Jan Elen, KU Leuven, Belgium; **Co-Author:** Annelies Raes, KU Leuven, Belgium; **Co-Author:** Fien Depaep, KU Leuven, Belgium

Many argue that digital personalized learning (DPL) may contribute to (non)cognitive learning and efficiency outcomes (Aleven, McLaughlin, Glenn & Koedinger, 2017). Given the rising interest in DPL and the rapid developments in technology, a broad diversity of tools emerged. However, with any new technology, the implementation process is influenced by various conditions, such as teacher perceptions and views. Many studies examine the perceptions of teachers on the implementation of technology in general. However, the views concerning personalized technology specifically, are less explored. The aim of this study is to

assess views of teachers on DPL and to explore the (future) implementation of DPL-tools in the classroom. Ten focus group interviews were conducted, including 56 stakeholders (primary and secondary school teachers). The research questions of this study are: (1) How do teachers perceive the idea of DPL in general? and (2) What are teachers' views on the implementation of DPL-tools in their (future) lessons? The findings suggest that there is limited awareness of DPL in general, resulting in low use of DPL-tools in present lessons. The participants showed an active willingness to implement DPL-tools in their future lessons, but also discussed some concerns (e.g., targeted learners, high-quality and user-friendly tools, room for the teacher to intervene, technical challenges, ...). Taken together, these insights can be helpful for policy makers, educational actors and researchers who want to further develop implementation strategies for DPL-tools in the classroom.

#### Session D 4

19 August 2021 10:15 - 11:15

Session Room 1

Poster Presentation

Higher Education, Instructional Design, Learning and Social Interaction, Motivational, Social and Affective Processes

#### Mathematics and Problem Solving

**Keywords:** Educational Technology, Emotion and Affect, Experimental Studies, Instructional Design, Mathematics, Phenomenography, Problem Solving, Problem-based Learning, Science Education, Secondary Education, Student Learning, Teaching/Instruction, Vocational Education

**Interest group:** SIG 04 - Higher Education, SIG 09 - Phenomenography and Variation Theory, SIG 20 - Inquiry Learning, SIG 27 - Online Measures of Learning Processes

**Chairperson:** Soeharto Soeharto, University of Szeged, Doctoral School of Education, Indonesia

#### Computer-Based Virtual Environment Simulations for Differential Diagnosis in Medical Education

**Keywords:** Educational Technology, Instructional Design, Problem Solving, Teaching/Instruction

**Presenting Author:** Christian Fässler, Swiss Federal Institute of Technology ETH Zurich, Switzerland; **Co-Author:** Manu Kapur, ETH Zurich, Switzerland; **Co-Author:** Jörg Goldhahn, Institute for Translational Medicine, Switzerland

Despite acquiring massive amounts of content knowledge about the functioning of the human body, medical students struggle to transfer that knowledge to one of the core disciplinary practices - differential diagnosis. This is accompanied by more clinical errors, where evidence suggests that the most common medical error results from inadequate clinical reasoning. The lack of transfer may stem from current methods of university teaching which are focused primarily on imparting massive amounts of basic content knowledge without adequate attention to situate this knowledge in disciplinary practice. A possible solution to this problem is to expose and link the learning of medical students to the practice of differential diagnosis. To do so, we aim to explore the use of medical computer-based virtual environment simulations with virtual patients. This approach is supported by theories of experiential learning. Hence, in this study we will implement the preparation for future learning paradigm in a quasi-experimental design to investigate when, in combination with direct instruction, problem-solving in virtual patient scenarios leads to best acquisition and transfer outcomes of clinical knowledge and clinical reasoning skills. With the present work we will show whether virtual patient simulations are an adequate approach to enhance the acquisition and transfer of clinical knowledge and clinical reasoning skills. Furthermore, based on our findings we will come up with suggestions of when to best implement computer-based virtual environments for differential diagnosis into a medical curriculum.

#### A Model of Problem-Solving in STEM based-Education

**Keywords:** Mathematics, Problem Solving, Problem-based Learning, Science Education

**Presenting Author:** Ijtihadi Kamilia Amalina, University of Szeged, Doctoral School of Education, Hungary; **Co-Author:** Tibor Vidákovich, University of Szeged, Hungary

Problem-solving in the area of Science, Technology, Engineering, and Mathematics (STEM) is a useful mechanism to answer 21<sup>st</sup>-century challenges. However, the main problem concerns the lack of existing task-based STEM problem-solving models that emphasize cognitive and metacognition processes that contribute to the challenges posed in this area. This paper is the initial stage of our research to examine 49 articles published between 2010 and 2020 to explore the STEM problem-solving frameworks in cognitive and metacognition areas. It also discusses a new model of STEM problem-solving that can be a basis for assessment. It focuses on cognition and metacognition within a problem-based task. Results revealed heuristic problem-solving still be a dominant framework in the monodisciplinary skills area. However, engineering design-based and scientific inquiry started to infuse but more concerned on practical problem-solving. The results lead to the development of a new model to provide the steps of problem-solving. It combines the 'Programme for International Student Assessment' (PISA) framework, mathematics (e.g., proving), sciences (e.g., scientific inquiry), engineering and technology (e.g., design-based engineering), as well as heuristic framework, and metacognition skills. The metacognitive process is measured through expressing problem visualization, development of reasonable arguments, evaluation, and reflection. Inquiry and design-based engineering are revealed by making a prediction (hypothesis), designing and testing solutions. Furthermore, the area of mathematics is emphasized in the application of mathematics concepts and deductive thinking that leads to a conclusion. The proposed model will support the development of task-based assessment in an interdisciplinary area for further study. It also answers the issue of the time consumed in measuring students' problem-solving capacity in STEM-based education.

#### Tracing the significance of coefficients in learning to solve equations

**Keywords:** Mathematics, Phenomenography, Secondary Education, Vocational Education

**Presenting Author:** Anna Holmlund, University of Gothenburg and Chalmers University of Technology, Sweden

The coefficients in an equation are significant, as a change from natural numbers to negatives can make an equation unrecognizable to students (Vlassis, 2002). Furthermore, students tend to confer characteristics from natural numbers onto non-natural numbers (Vamvakoussi, et al., 2012), but only a limited amount of research explores how this affect algebra learning. We outline the design of a study, aiming at exploring in what ways primarily decimal numbers, but also negative numbers, influence students in vocational education, as they address linear equations. A test was distributed to 111 students, attending their first year in upper secondary school, and 23 qualitative semi-structured interviews were conducted in order to learn more about how handling different number domains are a crucial part of learning to solve equations. The interviews are analyzed using a phenomenographic approach (Marton, 1981). The results indicate that there is a significant decrease in students' ability to solve equations, when coefficients change from positive integers, despite students having calculators as aid. Some students experience difficulties to recognize equations of a familiar structure with non-natural number coefficients. Moreover, several students favor solving the equations in the domain of natural numbers, which is experienced as easier to understand and process. Occasionally, this leads to errors, as the conversion between number domains is affected by students' natural number bias. Marton, F. (1981). Phenomenography – describing conceptions of the world around us. *Instructional science*, 10(2), 177–200. Vamvakoussi, X., Van Dooren, W., & Verschaffel, L. (2012). Naturally biased? In search for reaction time evidence for a natural number bias in adults. *The Journal of Mathematical Behavior*, 31(3), 344–355. Vlassis, J. (2002). The balance model: Hindrance or support for the solving of linear equations with one unknown. *Educational Studies in Mathematics*, 49(3), 341–359.

#### Measuring math anxiety through self-reports and physiological data

**Keywords:** Emotion and Affect, Experimental Studies, Mathematics, Student Learning

**Presenting Author:** Febe Demedts, University of Leuven - Campus KULAK, Belgium; **Co-Author:** Bert Reynvoet, University of Leuven - Campus KULAK, Belgium; **Co-Author:** Delphine Sasanguie, HoGent, Belgium; **Co-Author:** Fien Depaepe, KU Leuven, Belgium

A lot of research addressed the factors attributional to the acquisition of math proficiency, demonstrating the impact of both cognitive and non-cognitive factors. An important affective factor is math anxiety (MA), which can be defined as the negative affective reaction some people experience in situations involving mathematics. Usually, MA is measured by mean of self-reports, but new technologies facilitate the possibilities of more objective methods, for example the use

of physiological responses. However, few research on this topic has been done. We therefore aimed at (1) investigating if differences in topic (math vs non-math) and difficulty level (easy vs difficult) of a task result in differences in terms of performances (accuracy and reaction time), self-reports (anxiety and difficulty) and physiological measures, and (2) analysing if self-reported math anxiety can be explained in terms of physiological measures. In this study, we collected performance data, self-reports and physiological measures of 44 students. Results revealed differences in performance and self-reports, indicating that the math tasks and difficult tasks were administered slower and less accurate and participants reported higher anxiety and perceived difficulty. Except the two difficult tasks were perceived equally difficult and answered equally accurate. There were few significant differences in terms of physiological measures, only for the difficult math task, the standard deviation of the skin temperature was higher compared to all other tasks and the standard deviation of the heart rate was higher compared to the easy non-math task. Furthermore, results indicated the phasic galvanic skin responses and the standard deviation of the skin temperature significantly predict the self-reported math anxiety. Our findings emphasizes the possibility to combine self-reports and physiological data to measure MA.

#### Session D 5

19 August 2021 10:15 - 11:15

Session Room 4

Poster Presentation

Higher Education, Learning and Social Interaction, Lifelong Learning

#### Higher and Vocational Education

**Keywords:** Case Studies, Computer-supported Collaborative Learning, Content Analysis, Cultural Diversity in School, Culture, Developmental Processes, Higher Education, Multicultural Education, Qualitative Methods, Social Interaction, Student Learning, Teacher Professional Development, Teaching/Instruction, Vocational Education

**Interest group:** SIG 04 - Higher Education, SIG 10 - Social Interaction in Learning and Instruction, SIG 14 - Learning and Professional Development, SIG 23 - Educational Evaluation, Accountability and School Improvement (merged with SIG 18)

**Chairperson:** Erica Kamphorst, University of Groningen, Netherlands

#### Exploring university students' interaction process while collaboratively writing a synthesis text

**Keywords:** Case Studies, Computer-supported Collaborative Learning, Higher Education, Social Interaction

**Presenting Author:** Karen Putzeys, Ghent University, Belgium; **Co-Author:** Bram De Wever, Ghent University, Belgium

Writing synthesis texts is an important task for university students, since it allows them to build knowledge based on reliable sources. Earlier research shows the positive impact of collaborative writing on the quality of the synthesis texts. However, more research is wanted to explore the process leading to these outcomes. More in particular, the interactions taking place between collaborating students deserve more attention. This study aims at uncovering students' interactions while collaboratively writing a synthesis text in small groups. A case study was set up in which two independent groups of three voluntary students each collaboratively wrote a synthesis text based on three provided sources. They used Google Docs and the videoconferencing tool Zoom to be able to write and interact synchronously. A coding scheme for coding specific actions (i.e., utterances) was adapted from the coding scheme of Damşa (2014) and applied to units of meaning. This coding scheme is hierarchically structured. The highest level contains three dimensions, focusing on *epistemic*, *regulative* and *other* actions respectively. The results show that group 1 talked twice as much as group 2. Overall, group 1 started with a collectively agreed upon planning, monitored their process, and made sure that everyone understood the information from sources the same way. They focused predominantly on epistemic actions (sharing information from sources), followed by regulative actions (discussing a plan of action). In contrast, group 2 started with a vague planning, which led them to discussing and altering their plan repeatedly later on. Group 2's students rarely kept each other informed about their activities. Group 2 engaged mostly in regulative actions, but in a less productive way. Based on these two groups, it can be concluded that smooth collaboration among students is not self-evident.

#### Evaluation of English Curriculum in Terms of Intercultural Communication Competences

**Keywords:** Cultural Diversity in School, Culture, Higher Education, Multicultural Education

**Presenting Author:** Funda Kelahmetoğlu Tunçer, Middle East Technical University, Turkey

English language teaching methodology has shifted to a communicative style long ago thanks to scientific improvements and the effects of globalization. Because of its interdisciplinary nature, English language teaching has been the focus of many fields. That's why, any attempt to develop a comprehensive language curriculum without the notion of culture and communication would be missing. With this highlight of intercultural communication in language teaching, curriculum studies have started to adapt a more communicative strategy and shaped aims and content accordingly. Byram (1997) identified the intercultural communicative competences which should be included in the language curriculum as tolerance, empathy, respect, flexibility, knowledge and awareness. This study aimed to evaluate an English language curriculum in terms of intercultural communicative competences using Eisner's Connoisseurship Model to determine which of these competences and to what extent were included in the program. Interviews and focus group meetings with different stakeholders and in-depth analysis of program documents revealed that there is not a conscious reference to these competences in any of the program documents. However, interaction among the teaching staff and students helped acquisition and development of these skills as university environment provides a multicultural context. Specifically, student clubs and extracurricular activities helped students raise awareness about other cultures and invested in their confidence in communication in English. Although there is not a conscious emphasis on the intercultural communicative competences in the written curriculum, a natural reconstruction of the skills is possible in the applied and the hidden curriculum. All in all, communicative skills need to be attained in an authentic, multicultural learning environment and there is still a need to determine these competences in the goals of the curriculum without limiting them to behavioral objectives but to integrate them with the construction of knowledge and the language.

#### Constructing a participatory-transformative Future Skills approach for Higher Education

**Keywords:** Content Analysis, Qualitative Methods, Student Learning, Teaching/Instruction

**Presenting Author:** Laura Eigbrecht, DHBW Karlsruhe, Germany

Higher education institutions are confronted with new challenges: a global massification of higher education as well as a transformation of society as a whole, being described by terms such as globalisation, digitisation, acceleration and climate change and permeating all domains of us living, learning and working together as students, citizens, employees. Higher education thus support competences which allow students to be able to act in highly emergent future contexts, making *Future Skills* one of the hot topics in current debate and research on higher education, resulting in many discussion papers and competence models and frameworks. Those being a basis for and further developed into educational policies, higher education strategies and curricular design, it is of great importance to analyse which vision of (higher) education is at their basis, relating to different ideas of learning and ideas about what higher education exactly should prepare for. Debates on *Future Skills* are never neutral and objective and always include an idea of the individual's role in a society – in the same way that specific conceptions of education are always normative and place the individual in a certain relation to society. The poster will focus on the first step of a dissertation research project on *Future Skills* in higher education: analysing different *Future Skills* approaches across several inductively chosen dimensions, in a normatively reflected manner, in order to construct a specific *Future Skills* approach for higher education as a basis for designing and empirically validating an orientation framework for successfully implementing it. The *Future Skills* approach constructed in this dissertation project shall consider *Future Skills* in a participatory, emancipatory, responsible and transformative way.

#### Input from the grass roots - Challenges and problems of VET professionals in Germany

**Keywords:** Developmental Processes, Qualitative Methods, Teacher Professional Development, Vocational Education

**Presenting Author:** Sebastian Anselmann, University of Education Schwäbisch Gmünd, Germany; **Co-Author:** Stefan Harm, University of Rostock, Germany;

**Co-Author:** Uwe Faßhauer, University of Education Schwäbisch Gmünd, Germany

In the past, vocational education and training professionals have often not been systematically prepared for their demanding tasks. Professional development can be understood as an enlargement of competencies also through opportunities in daily work. (Collin, Van der Heijden, & Lewis, 2012). It is necessary to keep a close look on VET training professionals' actual challenges and problems they are facing in their daily work (Dymock & Tyler, 2018). Consequently we focus in this study on VET training professionals and their professional development. The research question is: What challenges and problems regarding their professional development as well as possible solutions are described by training professionals in VET in Germany?

The aim of this study is to find out what challenges training professionals in VET face and how they describe to cope with it. Therefore, we conducted (A) an explorative study with group discussions ( $N=53$  participants in six groups) and (B) validated the results with experts ( $N=10$ ) in VET in Germany. Data were recorded, transcript, analysed with a qualitative content analysis.

Results of the group discussions were summarized in twelve statements. Statements refer on the systematic, organizational and individual level. The statements show that participants pointed out that despite the necessity of formal professionalization (e.g. AEOV), many of VET training professionals need specific trainings for example on topics like instructional design or digital media. The results of this study show that there is a huge need for qualification and learning opportunities for VET training professionals.

References: Collin, K., Van der Heijden, B., & Lewis, P. (2012). Continuing professional development. *International Journal of Training and Development*, 16(3), 155-163. Dymock, D., & Tyler, M. (2018). Towards a more systematic approach to continuing professional development in vocational education and training. *Studies in continuing education*, 40(2), 198-211.

## Session E 1

19 August 2021 11:30 - 12:30

Session Room 3

Poster Presentation

Learning and Instructional Technology, Teaching and Teacher Education

### Technology-Enhanced Learning

**Keywords:** Competencies, Computer-assisted Learning, Design-based Research, Game-based Learning, Higher Education, Informal Learning, Learning Technologies, Multimedia Learning, Out-of-School Learning, Pre-service Teacher Education, Professions and Applied Sciences, Quasi-experimental Research, Science Education, Teaching/Instruction, Technology

**Interest group:** SIG 07 - Technology-Enhanced Learning And Instruction

**Chairperson:** Ipek Saralar-Aras, Turkey

### Preservice Maths Teachers Techno-pedagogical Content Knowledge Regarding Geometry

**Keywords:** Design-based Research, Pre-service Teacher Education, Teaching/Instruction, Technology

**Presenting Author:** Ipek Saralar-Aras, Ministry of Turkish National Education, Turkey; **Co-Author:** Bengi Birgili, MEF University, Turkey

The issue of teaching through and with technology received considerable attention in the last decade and using various technologies to enhance pre-service teachers' understanding of geometry has been suggested by many researchers. However, given the number of studies and the importance of integrating technology into geometry teaching, many pre-service teachers still find it challenging to teach geometry with technology in their first years of teaching. In our previous research, we observed a number of mathematics teachers when they were teaching 3D geometry in middle school classes and noted the difficulties of both students when learning these with the available tools and methods (Authors, 2018) and teachers when teaching certain objectives (orthogonal and isometric drawings of 3D shapes) from 3D geometry (Authors, 2019). The study reported in this paper focused on finding specific challenges of the pre-service teachers using a techno-pedagogical content knowledge (TPACK) survey as the first cycle of a design-based research study. Consequently, we plan to design a 14-week course to improve pre-service maths teachers TPACK with hopes of overcoming the observed lack of knowledge found in this study. **Keywords:** Pre-service maths teachers, geometry knowledge, TPACK, design-based research, survey

### VR simulation training in healthcare: professional development

**Keywords:** Competencies, Game-based Learning, Learning Technologies, Professions and Applied Sciences

**Presenting Author:** Emilia Lampi, University of Jyväskylä, Finland; **Co-Author:** Ari Tuhkala, University of Jyväskylä, Finland; **Co-Author:** Joni Lämsä, University of Jyväskylä, Finland; **Co-Author:** Maarit Virolainen, University of Jyväskylä, Finland; **Co-Author:** Katja Vähäsantanen, University of Jyväskylä, Finland; **Co-Author:** Raija Hämäläinen, University of Jyväskylä, Finland

The unpredictable nature of fieldwork in healthcare requires a wide range of dynamic competences to ensure patient safety. At the same time the students' opportunities to experience clinical environments are often limited, which leads to an increasing demand to find other ways to design valuable and meaningful learning experiences. Solutions have been sought through experimenting with virtual reality (VR) simulations that provide stable, effective and resource-wise learning environments that overcome the barriers of time and location. In this dissertation project, we conducted two substudies. Substudy I consists of a systematic literature review of 2129 articles related to VR, healthcare and professional development. An automated topic modeling was used as a tool to identify relevant articles to the systematic literature review. Additionally, the topic model itself illustrates the field of research associated to the research field. Substudy II is based on a clinical VR simulation, which was conducted to 13 teams of 2-3 professionals and/or students. In addition to group interviews, heart rate variability (HRV) was collected to get a deeper understanding about the experiences of learning through VR simulations. The results of this dissertation project will illustrate how VR technologies enhance professional development in simulation training of healthcare professionals. Furthermore, the results will advance the theoretical and empirical understanding of the wider framework of VR learning and remotely accessible learning tools.

### Digitally supported learning in informal learning places - motivational and cognitive effects

**Keywords:** Informal Learning, Multimedia Learning, Out-of-School Learning, Quasi-experimental Research

**Presenting Author:** Miriam Degner, Technische Universität München (TUM), Germany; **Co-Author:** Doris Lewalter, Technical University of Munich (TUM), Germany; **Co-Author:** Stephanie Moser, TUM Technical University of Munich, Germany

Informal learning places such as zoos, aquariums or field trips, offer learners the opportunity to experience a variety of complex observation and comparison scenarios that are difficult to implement in the school context. However, observation in this kind of setting is often spontaneous, uncoordinated and unstructured. Digital media such as tablets or smartphones can stimulate and guide observation by means of various cues, and thus can enrich excursions to informal learning places in many ways. For this reason, one main aim of the study is the development of digital learning materials for supporting students' observation competences in informal learning places. Relevant for learning with digital media are supportive elements that foster motivational and cognitive processes. Thus, the planned research investigates the role of worked out examples (WoE) as support for knowledge gain and learning process during media-supported learning in informal learning places. The positive effect of WoE is already empirically proven, but not in informal learning places with regard to the observation competences. WoE are particularly suitable to support the acquisition of certain cognitive schemata, e.g. the sequence of steps of scientific observation and comparison activities. Motivational support should be provided to learners by taking their basic needs into account when designing the digital learning environment and the work out examples. The study is designed as a 3-factorial quasi-experimental comparative study. WoE in different formats will be integrated into a digital learning environment providing assistance to a biological field trip to a water body, aiming to guide university students through their observation activities. Data will be collected from 180 university students using an online questionnaire.

### Access the Molecular World through Haptic Quantum Chemistry

**Keywords:** Computer-assisted Learning, Higher Education, Learning Technologies, Science Education

**Presenting Author:** Charlotte Müller, Professorship for Learning Science and Higher Education, Switzerland; **Co-Author:** Manu Kapur, ETH Zurich, Switzerland; **Co-Author:** Markus Reiher, Laboratorium für Physikalische Chemie, ETH Zürich, Switzerland

In order to understand outcomes of chemical reactions, chemists have to understand the microscopic behavior of molecules governed by quantum principles.

There is no analogous phenomenon in the macroscopic, classical world, which creates difficulties for novices to ground new information in prior knowledge or experience (Tümay, 2016). One approach towards creating a bridge between the macro and the micro lies in the translation of the forces present in chemical reactions to the learner, thereby making these quanta accessible to their senses. Following the theoretical framework of grounded cognition, this should facilitate learning by allowing new information to be grounded in sensory experience (Barsalou, 2008). We are exploring this by introducing a new haptic learning environment (HLE) for first-year university students. The students will be able to experience the response of a chemical system to their manipulation in real-time. While previous research has shown that HLE can facilitate learning of scientific concepts, evidence about the cognitive mechanisms and about the applicability in basic chemistry is sparse (Zacharia, 2015). We will explore these gaps in a project consisting of three milestones. I) the development of the HLE, and the posttest measuring understanding of potential energy (surfaces), force, and reactivity (done), II) a small-scale user study to optimize both (fall, 2021), III) an experimental study following a preparation for future learning (PFL, Schwartz, 1999) design concentrating on forces and energy in basic chemical reactions (spring, 2022). We hope to answer the questions of how this HLE prepares for future learning in a lecture, compared to the environment without the haptic feature (comparison condition) and to watching a movie about the interaction (control condition), and what cognitive mechanisms might be involved.

## Session E 2

19 August 2021 11:30 - 12:30

Session Room 6

Poster Presentation

Higher Education, Motivational, Social and Affective Processes

### Motivation and Emotion

**Keywords:** Achievement, Assessment Methods and Tools, Competencies, Educational Psychology, Higher Education, Metacognition, Motivation and Emotion, Psychometrics, Quantitative Methods, Self-regulation, Social Aspects of Learning and Teaching

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

**Chairperson:** Terhi Vessonen, University of Helsinki, Finland

### The role of soft skills in sustaining students' life satisfaction and academic achievement

**Keywords:** Achievement, Competencies, Motivation and Emotion, Self-regulation

**Presenting Author:** Tommaso Feraco, Università degli Studi di Padova, Italy; **Co-Author:** Dario Resnati, Pentathlon srl, Italy; **Co-Author:** Davide Fregonese, Pentathlon srl, Italy; **Co-Author:** Chiara Meneghetti, Università degli Studi di Padova, Italy

Soft skills are important factors for students' future work success and many institutions, such as the European Union or the Ministry of Education, University, and Research in Italy, are sustaining their development, suggesting an early educational intervention. However, it still unclear whether they might play a central role during adolescence in predicting positive scholastic outcomes and well-being in students. In this study, we selected six soft skills (adaptability, curiosity, leadership, initiative, perseverance, and social awareness) and integrated them with other proven predictors of academic achievement such as achievement emotions, self-regulated learning, motivation, and cognitive abilities to study the unique pattern of relations that these factors play in sustaining students' academic achievement and life satisfaction. 603 students (5<sup>th</sup> to 12<sup>th</sup> graders) participated to the study. Using a light meta-analytical approach, we calculated all the plausible correlations connecting each pair of variables and we used these as priors for a Bayesian path analysis. Results show that soft skills positively relate with students' achievement emotions, self-regulated learning, motivation, and life satisfaction and indirectly favour academic achievement through the mediation of self-regulated learning and motivation. Differently, only soft skills and achievement emotions directly related to life satisfaction. Concluding, soft skills resulted playing a central role in favouring students' positive approach to learning, in term of behavioural, cognitive, and affective states, while also sustaining their life satisfaction, contrarily to other direct predictors of academic achievement.

### The joint role of students' expectation discrepancies and their interests for study success

**Keywords:** Achievement, Educational Psychology, Higher Education, Motivation and Emotion

**Presenting Author:** Belinda Merkle, University of Mannheim, Germany; **Co-Author:** Oliver Dickhaeuser, University of Mannheim, Germany

Past research focused on the role of the absolute value of discrepancies between students' expectations and central study contents on study success. Going beyond these approaches, the valence of the discrepancies must be considered. Expectation discrepancies (expecting less or more time allocation for specific contents than suggested by expert estimates) can be of positive or negative valence depending on the level of (dis)interest for these specific contents. Based on the person-environment fit theory we postulate that higher interest in central contents and beyond that more positive expectation discrepancies (e.g., more of interesting contents than expected) relate to more study success (motivation, well-being, dropout intention, academic achievement). *Study 1:* We assessed study success and afterwards interest and the valence of the expectation discrepancy in a sample of psychology students ( $n=367$ ). *Study 2:* To address the correlational and retrospective limitations of this data, we used interest and valence of expectation discrepancy data from freshman students ( $n=445$ ) of whom 106 students reported on their study success one year later. Study 1 showed that higher interest in central contents of the psychology major was related to more study success. The more positive students' valence of expectation discrepancies the higher their study success. However, in study 2 neither interest nor the valence of the expectation discrepancy positively predicted study success one year later. Additional analyses to explain this unexpected finding as well as implications on how to best assess and feedback student-major fit to better assist prospective students in making self-guided study choices will be discussed.

### Validating the Short Version of the Multidimensional Emotional Competence Questionnaire using ESEM

**Keywords:** Competencies, Motivation and Emotion, Psychometrics, Quantitative Methods

**Presenting Author:** Sebastian Gerbeth, University Regensburg, Germany; **Co-Author:** Elena Stamouli, University of Regensburg, Germany; **Co-Author:** Regina Mulder, University of Regensburg, Germany

Social interactions of active citizens are the fundaments of democratic societies and call for the promotion of collaborative and cooperative skills and abilities. When seeking to understand interactions with other people from an emotional perspective previous research has documented that the competence to deal with emotional situations while interacting with other people is complex. Individuals often react differently when emotions are experienced. In this context, emotional competence comprises a set of personal and contextual competences, including self-awareness, understanding emotions, the perception of one's own or others' emotions and the regulation, expression and handling of emotions. The field has been dominated over the past decade by a focus on the unidimensional construct of emotional competence from a trait perspective, but there is a demand to consider this competence as a multidimensional construct in contrast. The multidimensional emotional competence questionnaire (MECQ) in its long and recently new developed short version (MECQ-s) addresses the necessary multidimensionality of the emotional competence construct. This research project aims to validate the MECQ-s as a measurement instrument that fits high quality criteria for measurement instruments and high psychometric properties. To evaluate the construct validity of the measurement instrument and to check whether the theoretical integrity of the construct is maintained in the short version, the approach of exploratory structural equation modelling (ESEM) was applied. In contrast to the very restrictive assumption of confirmatory factor analysis, the ESEM allows relationships between items or factors to be reflected in the model. For multidimensional constructs such as the EC or the BigFive, in which items and factors are not completely independent of each other, the ESEM shows a better model fit. The results provide important information for the evaluation of construct validity and help to clarify the factor structure in complex constructs.

### Acceptance and Commitment Approach to School Engagement: The Development of a Questionnaire

**Keywords:** Assessment Methods and Tools, Metacognition, Motivation and Emotion, Social Aspects of Learning and Teaching

**Presenting Author:** Giulia Vettori, University of Florence, Italy; **Co-Author:** Daniele Mugnaini, Freelance Psychologist, Italy

This study was developed to build a new self-report Questionnaire to assess AC-related-school-engagement (ACSE) among middle-school students through

their own perspective, by specifically focusing on the sense of school- or class-belonging (e.g., peers, teachers, and school environments). We suggest looking at "school engagement" from the Acceptance Commitment Therapy (ACT) perspective. *Acceptance* - Is the student interested and able to approach school-subjects and school-learning with an interested, curious, confident, non-judging, enjoying, and satisfying attitude? *Commitment* - Is school-learning functional to the student's personal values? Is it important for the student? Is the student committed to schooling? *Experiential avoidance* - Is the student capable to identify behaviours (e.g., experiential avoidance of negative feelings, such as fatigue, failure-risk, or having to wait) that do not help him/her to pursue own personal values? Finally: Are students perceiving their school, parents and peers as promoting an ACT approach to school-learning? In this poster, ACSE Questionnaire's phases of (1) dimension choice and (2) items development through focus group discussion with teachers are presented alongside its future expected application to middle school students. AC approach to school-engagement is at its initial stage of scientific research. There are theoretic and scientific reasons to consider it as a promising way to acquire information from students and guiding effective interventions to empower their school engagement, quality of life and academic success. This study provides initial evidence to support the development of a self-report questionnaire to assess ACSE in middle school education and provides the basis to further exploration of its validity and reliability. In the long run, the instrument may help to teachers, parents, and middle-school students themselves to gain useful information about ACSE resource areas that need to be enhanced and weakness areas that need to be developed in evidence-based interventions, both at a class- and a personalized level.

### Session E 3

19 August 2021 11:30 - 12:30

Session Room 4

Poster Presentation

Assessment and Evaluation, Learning and Social Interaction

#### Peer Interaction

**Keywords:** Assessment Methods and Tools, Computer-supported Collaborative Learning, Educational Psychology, Knowledge Creation, Meta-analysis, Parental Involvement in Learning, Peer Interaction, Primary Education, Secondary Education, Social Interaction, Video Analysis

**Interest group:** SIG 01 - Assessment and Evaluation, SIG 07 - Technology-Enhanced Learning And Instruction

**Chairperson:** lida Vedenpää, University of Helsinki, Finland

#### The psychosocial profile of student victims of school bullying in primary education

**Keywords:** Educational Psychology, Peer Interaction, Primary Education, Social Interaction

**Presenting Author:**Zara Suárez-García, Universidad de Oviedo, Spain; **Co-Author:**Marisol Cueli, Universidad de Oviedo, Spain; **Co-Author:**Débora Areces, University of Oviedo, Spain; **Co-Author:**Paloma Gonzalez-Castro, University of Oviedo, Spain; **Co-Author:**David Álvarez-García, Oviedo University, Spain

School bullying has significant negative consequences for its victims, which is why it is essential to develop preventive early-detection measures. For that reason, the main risk factors must be identified. This study has two objectives: discover the proportion of students who report being victims of bullying at school in a sample of Spanish primary school students; and identify psychosocial traits that distinguish students who report being victims of school bullying from others. To that end, we evaluated the responses to two self-reports from 356 fourth-year primary school students aged between 9 and 11, from 10 schools in Asturias (Spain). In order to discover which students felt victims of bullying they responded to the question: "So far this school year, do you think you have been the victim of bullying at school?". To discover each child's psychosocial traits we used the *Evaluation System for Children and Adolescents* (SENA; Fernández-Pinto et al., 2015). The results indicated that 13.2% of the students reported having been the victim of bullying. No statistically significant associations were found between being a victim and gender. The results also showed that the victims presented more internalizing and externalizing problems, along with more problems with their peers, teachers and families. The practical implications of these results are discussed. This study was financed by the government of the Principality of Asturias and the European Union (Ref. FC-GRUPIN-IDI/2018/000199); by the Spanish Ministry of Science, Innovation and Universities (Ref. PGC2018-097739-B-I00); and by the department of Education and Culture of the Principality of Asturias ("Severo Ochoa" pre-doctoral grant for the lead author).

#### The Relationship between Parental Control and High-Risk Internet Behaviours in Adolescence

**Keywords:** Parental Involvement in Learning, Peer Interaction, Secondary Education, Social Interaction

**Presenting Author:**Zara Suárez-García, Universidad de Oviedo, Spain; **Co-Author:**Ellian Tuero, University of Oviedo, Spain; **Co-Author:**Trinidad García, University of Oviedo, Spain; **Co-Author:**Celestino Rodríguez, University of Oviedo, Spain; **Co-Author:**David Álvarez-García, Oviedo University, Spain

One of the main predictors of being a victim of cyber-aggression is engaging in high-risk behaviours on the internet. The main objective of this research is to analyse the relationship between two types of parental control (restriction and supervision) and engagement in high-risk internet behaviours during adolescence. To that end, and as a secondary objective, we designed and validated the *High-risk Internet Behaviours Questionnaire* for adolescents, used in this study. Our sample was composed of 946 adolescents aged between 12 and 18, enrolled in six compulsory secondary schools in Asturias (Spain). The participants were selected if they owned their own mobile phone, used instant messaging, participated in social networks, and surfed the internet for non-homework purposes. We analysed their responses to the *High-risk Internet Behaviours Questionnaire* and the *Questionnaire on Parental Control of Internet Use in Adolescence*. The results show that the questionnaire has appropriate metrics of reliability and validity, and show the existence of a statistically significant negative relationship, albeit small, between supervision and engaging in high-risk internet behaviours. We discuss the practical implications of these results. This study was financed by the government of the Principality of Asturias and the European Union (Ref. FC-GRUPIN-IDI/2018/000199); by the Spanish Ministry of Science, Innovation and Universities (Ref. PGC2018-097739-B-I00); and by the department of Education and Culture of the Principality of Asturias ("Severo Ochoa" pre-doctoral grant for the lead author).

#### How Do Knowledge Co-Construction and Social Regulation Interplay in a CSCL Task?

**Keywords:** Computer-supported Collaborative Learning, Knowledge Creation, Peer Interaction, Video Analysis

**Presenting Author:**Kateryna Zabolotna, University of Oulu, Finland; **Co-Author:**Jonna Malmberg, University of Oulu, Finland; **Co-Author:**Sanna Järvelä, University of Oulu, Finland; **Co-Author:**Hanna Jarvenoja, University of Oulu, Finland

Knowledge construction and regulation of learning are seen as important predictors of academic achievement in collaborative learning. However, little is known about how these two processes interplay in the context of collaboration. In social settings, it is still challenging to differentiate and identify the relationships between them as they both appear through similar cognitive and metacognitive processes (Järvelä et al., 2013). It is also necessary to develop an understanding of how group members apply regulatory strategies while constructing shared knowledge and what regulatory mechanisms lead them to negotiate and produce a shared understanding of a task (Lee et al., 2017; Shukor et al., 2014). Thus, our study explores how co- and socially shared regulation of learning (CoRL and SSRL) interplay with various phases of knowledge co-construction in a computer-supported collaborative learning (CSCL) task. 34 secondary school students were videotaped while working collaboratively on a CSCL task about the science topic "center of gravity". The Interaction Analysis Model (Gunawardena et al., 1997) was used to code the video recordings for five knowledge construction phases (1. sharing/comparing; 2. exploring disagreement; 3. negotiating/co-constructing; 4. testing/modifying; 5. agreeing/applying). Further on, the following co- and socially shared regulatory processes were identified: 1) task understanding; 2) planning; 3) evaluation; 4) strategy use (Malmberg et al., 2017). The results indicate how students engage in knowledge co-construction and CoRL and SSRL in a CSCL task, show the differences between groups' engagement in both processes and point out the interplaying relationships between them.

#### A systematic literature review on the social nature of peer assessment

**Keywords:** Assessment Methods and Tools, Meta-analysis, Peer Interaction, Social Interaction

**Presenting Author:**Morgane Senden, Université catholique de Louvain (UCL), Belgium; **Co-Author:**Liesje Coertjens, Université catholique de Louvain (UCL), Belgium

Peer assessment, the fact the students with the same status assess each other, seems to be an effective way to enhance student learning. It is also, by nature, a social activity and this social aspect can impact students' learning and well-being. Up to present, two systematic literature review have been carried out on the subject: one by van Gennip et al. (2009) and one by Panadero (2016). Given that research on the social nature of peer assessment has flourished in recent years, an update is timely. Our aims are: (a) to investigate what researchers mean by "the social nature of peer assessment", (b) to review how peer assessment activities are impacted by their social nature and (c) to investigate how can we decrease the potential undesirable effects of the social nature of peer assessment activities. A literature search was carried out using Scopus, PsycINFO and ERIC. We include a wide selection of search terms. The first part was composed of keywords related to peer assessment. The second part was composed of keywords linked to educational contexts. We set out to include studies conducted in primary, secondary and higher education. The third part was composed of keywords related to the social nature of peer assessment (e.g. emotion, interpersonal, "psychological safety", friendship, trust, anonymity, relation, social...). The database search returned 13.847 results (without duplicates). The selection of the sample is ongoing. In a first step, titles and abstracts were screened for relevance, which resulted in a selection of 433 references.

#### Session E 4

19 August 2021 11:30 - 12:30

Session Room 8

Poster Presentation

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

##### Instructional Design and Learning Technologies

**Keywords:** Case Studies, Educational Policy, Inquiry Learning, Instructional Design, Multimedia Learning, Primary Education, Qualitative Methods, Technology, Video Analysis, Vocational Education, Workplace Learning

**Interest group:** SIG 06 - Instructional Design, SIG 18 - Educational Effectiveness and Improvement, SIG 20 - Inquiry Learning

**Chairperson:** Fitria Arifiyanti, University of Szeged, Doctoral School of Education, Hungary

##### Using storytelling method for supporting pupils' PBL in home economics and science education

**Keywords:** Inquiry Learning, Primary Education, Qualitative Methods, Video Analysis

**Presenting Author:** Liisa Lavonen, University of Helsinki, Finland

Multidisciplinary project-based learning (PBL) is considered to be important because pupils living in 21st-century society must obtain scientific literacy in order to engage with dramatic scientific and engineering breakthroughs in the future (Krajcik & Shin, 2014). In a PBL, pupils collaboratively use scientific and engineering practices while making sense of everyday phenomena. Practices, such as asking questions, investigating designs and attempting to solve problems, are similar to the practices scientists and engineers use at the professional level (Krajcik & Shin, 2014.) Storytelling can be used in PBL for example to contextualise a problem, and to introduce the driving question (Nordine et al, 2019). This supports pupils' learning processes since it will contextualize the problem and introduce the driving question. Moreover, storytelling brings a natural way of supporting pupils to engage in scientific and engineering practices as a part of PBL. The aim of this poster-presentation is to discuss the advantages and disadvantages of using the storytelling method as a part of PBL.

The empirical study was conducted in one Finnish primary classroom in Spring 2018. The designed learning unit was implemented in Grade3 (n = 21), where the pupils are aged between 9–10 years. The data were collected in a four-week period in which the researcher and teacher implemented a designed learning unit. The data consists of video recordings, observational field notes, and the pupils' digital artifacts from lessons. Collecting video data is pivotal in order to later analyse how the pupils respond to the story told and how they are involved with the scientific and engineering practices according to the driving question. In conclusion, a carefully pre-planned storytelling poses a meaningful driving question, connects the question to home economics, fosters the pupils' involvement and frames how the pupils view and communicate the everyday life phenomenon to be solved.

##### The Role of Regional Governance Networks in the Implementation of a Curriculum Reform in Switzerland

**Keywords:** Case Studies, Educational Policy, Qualitative Methods, Technology

**Presenting Author:** Thomas Wicki, PHBern, University of Teacher Education, Switzerland

A modular school subject for media education and informatics (M&I) is currently being implemented in 21 German-speaking cantons in Switzerland. The cantonal authorities were commissioned to adapt the curriculum to their local conditions and school schedules which led to 21 different solutions of teaching practice, training and further education of teachers. In the context of a larger research project "Reform@work" funded by the Swiss National Science Foundation (grant #188867), this study analyses the relations and structural features of six networks of cantonal experts in M&I using social network analysis. We assume that all actors and organizations serve a purpose and provide or demand a service to or from the system. Data analysis of 20 interviews reveals two different patterns of network relations that can be described as central implementation driver. In some cantons, educational authorities themselves promote further education of teachers and provide resources in collaboration with teacher education institutions. In a second group of cantons, educational authorities promote mandatory further education of teachers to a lesser extent or, in some cases, no further education in this regard is mandated at all. The decisions on financial resources and the acquisition of the infrastructure are left by law to authorities on the municipal level. The results of the comparison of the cantons may support policymakers in their task of drawing conclusions for planning and carrying out future educational reforms or enhance and further develop ongoing implementation efforts.

##### Exploring benefits and constraints of a part-time course concept using digital learning tools

**Keywords:** Instructional Design, Multimedia Learning, Vocational Education, Workplace Learning

**Presenting Author:** Frank Deckert, TU Dresden, Germany; **Co-Author:** Susanne Narciss, TU Dresden, Germany; **Co-Author:** Hermann Kördle, TU Dresden, Germany

**Background:** Due to constant technical development vocational training is required throughout a whole career. To meet the enterprises demands of high flexibility new concepts to teach the desired skills are needed for educational institutions. **Objective:** We are developing a course concept that digitally connects three learning spaces (individual, self-directed learning; classroom teaching; practical training) and uses a task-centred approach (e.g. Kirschner, & Van Merriënboer, 2008) to implement a competency-based education (e.g. Merrill, & Jones, 1990). We applied the concept to a part-time course that teaches competencies to work with computer numerical controlled (CNC) machines. We evaluated acceptance and motivational design of the course and explored benefits and constraints of the concept. Together with participants and trainers we seek to adapt the concept for future studies. **Method:** From March to July 2020 we conducted a course with a total of  $N = 20$  participants. During the course we collected data about course participation and performance. At the end of the course participants evaluated the course answering questionnaires for usability and motivational factors. **Findings and Implications:** A total of  $N = 11$  participants finished the course successfully. The motivational course features were rated positively and acceptance was rated high. The implementation of virtual classrooms was challenging for trainers and participant's preparation of efficient practical trainings can be improved. The application of the concept will be further optimized and tested in future studies.

#### Session E 5

19 August 2021 11:30 - 12:30

Session Room 7

Poster Presentation

Motivational, Social and Affective Processes, Teaching and Teacher Education

##### Motivation and Emotion

**Keywords:** Emotion and Affect, Lifelong Learning, Motivation, Motivation and Emotion, Qualitative Methods, School Effectiveness, Science Education, Social

Sciences, Teacher Effectiveness, Teaching Approaches

**Interest group:** SIG 01 - Assessment and Evaluation, SIG 08 - Motivation and Emotion, SIG 11 - Teaching and Teacher Education

**Chairperson:** Madeleine Strobel, University of Glasgow, UK, Sweden

### **Team teaching is emotional: Antecedents and qualities of teachers' emotions caused by team partners**

**Keywords:** Emotion and Affect, Motivation and Emotion, Qualitative Methods, Teaching Approaches

**Presenting Author:** Franziska Muehlbacher, University of Salzburg, Austria

Teacher emotions affect the quality of instruction as well as teacher well-being. Usually, teacher emotions have been examined regarding students' behaviour in rather traditional classroom settings. However, novel teaching forms include teacher collaboration, e.g. in the form of team teaching. Team teaching between at least two teachers plays out in complex social interaction situations in the classroom. Within this setting, the partner teacher acts as an additional antecedent for the formation of teacher emotions. This exploratory, qualitative study examines antecedents and manifestations of team teachers' emotions, caused by their partner, in the classroom. Theoretically, this study is based on an adapted version of Frenzel's (2014) reciprocal model on causes and effects of teacher emotions. Thirty semi-structured online interviews were conducted with Austrian team teachers from low-track lower secondary schools. The transcripts were analysed using structuring qualitative content analysis (Mayring, 2014). First results indicate that team teachers generally expect their partners to show achievement behaviour (e.g. having content knowledge), motivational behaviour (e.g. being engaged), socio-emotional behaviour (e.g. being respectful towards students), and relational behaviour (e.g. being honest). Moreover, shared beliefs and goals for students' learning are relevant for teachers' emotions. Based on appraisals, teachers experience a variety of emotions, such as joy, surprise, anger, shame, and boredom. Understanding teacher emotions in team-taught settings contributes to theoretically expanding the model of teacher emotions. Moreover, it fosters teachers' awareness of collaborative expectations, resulting in enhanced teacher professionalization. Implications are drawn for initial teacher and further education programs.

References Frenzel, A. C. (2014). Teacher Emotions. In E. A. Linnenbrink-Garcia & R. Pekrun (Eds.) *International Handbook of Emotions in Education* (pp. 494-519). New York: Routledge. Mayring, P. (2014). *Qualitative Content Analysis. Theoretical Foundation, Basic Procedures and Software Solution*. <https://nbn-resolving.org/urn:nbn:de:0168-ssoar-395173>

### **Investigating the relationship between test anxiety and motivation in science learning**

**Keywords:** Motivation, Qualitative Methods, Science Education, Social Sciences

**Presenting Author:** Soeharto Soeharto, University of Szeged, Doctoral School of Education, Indonesia; **Co-Author:** Benő Csapó, University of Szeged, Hungary

Student motivation in learning science is one of the essential factors to improve science achievement. Several factors are related to student motivation, such as achievement goals, intrinsic motivation, identified motivation, and test anxiety. We specifically included the test anxiety factor in this study to confirm debates in the motivation framework, especially in the relationship of Achievement Goal Theory (AGT) and self-determination theory (SDT). This study aims to investigate test anxiety role toward the student motivation framework in science learning. Samples were drawn using stratified random sampling. 811 students with 40.4% males and 59.6% females were selected from senior high school and undergraduate levels. AMOS version 24 was employed for statistical analysis using structural equation modeling. Data screening and outlier detection using Mahalanobis distance were performed before conducting further analysis. The result indicated there is no bias issue based on the single factor solution accounted for only 41.4% (less than 50%). The CFA results confirmed that the model of fit, reliability, and validity were achieved above the thresholds in the measurement model. In the structural model, we found that performance and mastery goals positively affect intrinsic motivation and identified motivation in science learning ( $p < .05$ ). However, test anxiety has no significant effect on intrinsic motivation and identified motivation, which confirmed that test anxiety does not affect student motivation in science directly. Although this study performed a comprehensive framework about student motivation in science learning, there were some limitations, such as no mediation and moderation analysis. This study can confirm the direct relationship between factors in motivation theories. We expect other researchers to continue and enlarge our findings to explore the impact of science learning motivation and other related factors.

### **Who drives innovation? Assessing interindividual differences in teachers' proactive behavior**

**Keywords:** Lifelong Learning, Motivation, School Effectiveness, Teacher Effectiveness

**Presenting Author:** Verena Jörg, German Institute for International Educational Research (DIPF), Germany; **Co-Author:** Ulrike Hartmann, DIPF | Leibniz Institute for Research and Information in Education, Germany; **Co-Author:** Mareike Kunter, DIPF | Leibniz Institute for Research and Information in Education, Germany

Challenging circumstances and changing demands in teaching profession require teachers to act proactively. Moreover, their self-starting, future- and change-oriented behavior (proactive behavior) is likely to contribute to success of everyday practice at school as well as to schools' capacities for innovation and future quality. Still, inter-individual differences regarding those behaviors are a scarcely studied topic in educational psychology. This study aims to introduce and evaluate instruments to assess teachers' proactive behavior systematically and theory-based. To do so, we introduce our adaptations of three established self-report scales for proactive behavior (voice, taking charge and personal initiative) to the field of teacher research and evaluate them with regard to their reliability and validity (RQ1). Additionally, we evaluate a newly developed behavior checklist, designed to capture teachers' proactive behavior based on retrospective behavior report (RQ2).

We analyze pre-existing data of two independent samples of German teachers (NRQ1 = 206/130, M (SD)age = 30.03 (3.90) / 41.05 (11.36), 76 / 65 % female; NRQ2 = 131, M (SD)age = 29.25 (2.62), 75 % female). In both samples our instruments capture inter-individual differences in teachers' proactive behavior reliably (scales  $\omega = .77 - .87$ , checklist  $r_{retest} = .77$ ,  $p < .001$ ). Convergent and discriminant validity within the scales and checklist and with related constructs indicate high construct and criterion validity and underline the significance of these instruments within existing measurement tools. Instruments can be used to investigate antecedents, consequences and ways to promote teachers' proactive behavior prospectively. While the scales allow for an economic assessment, the checklist captures proactive behavior in a particularly behavior-related and low-inferent way. Further results will be presented at the conference.

### **Keynotes 1**

19 August 2021 13:30 - 14:30

Auditorium A

JURE 2021 Keynote

### **Informed Trust in Science as a Way of Dealing with Science in Daily Life**

**Keywords:** Citizenship Education, Social Aspects of Learning and Teaching, Social Sciences, Synergies between Learning; Teaching and Research

**Interest group:**

**Chairperson:** Panagiota Christodoulou, University of Western Macedonia, Greece

Socio-scientific issues – such as climate change or the coronavirus pandemic – challenge individual and societal problem solving alike. Understanding and developing solutions for such issues fundamentally involves scientific knowledge. Thus, to make well-informed decisions in their daily lives and as citizens, it is vital that people know how to deal with scientific information. However, people's reasoning about scientific issues is constricted by two conditions: First, as scientific knowledge is highly complex, and often entails uncertainty, there are often no clear answers to people's questions. Second, scientific knowledge expands fast in many highly specialized subfields. Due to the resulting division of cognitive labor, laypeople's understanding of science (content knowledge) and about science (procedural knowledge) is necessarily bounded. But how can laypeople successfully engage with scientific information – which they often access online – despite their bounded understanding of science and while being confronted with complexity and uncertainty? In order to make up their mind about a socio-scientific issue, a person could deliberate *whom to trust*. This means that a person could assess whether an expert possesses expertise, integrity and benevolence making the expert a trustworthy source of knowledge. In my talk, I will provide a conceptual framework of epistemic trust. Especially, I will focus on one aspect of people's (online) engagement with scientific information, namely how people's assessments regarding the trustworthiness of information

sources are affected by the disclosure of uncertainty in scientific information. The empirical evidence I will present has immediate implications for education: How does epistemic trust play into people's functional scientific literacy? And how could learners' informed trust decisions be supported in education as well as through science communication?

### **Informed Trust in Science as a Way of Dealing with Science in Daily Life**

**Presenting Author:** Friederike Hendriks, TU Braunschweig, Germany

Socio-scientific issues – such as climate change or the coronavirus pandemic – challenge individual and societal problem solving alike. Understanding and developing solutions for such issues fundamentally involves scientific knowledge. Thus, to make well-informed decisions in their daily lives and as citizens, it is vital that people know how to deal with scientific information. However, people's reasoning about scientific issues is constricted by two conditions: First, as scientific knowledge is highly complex, and often entails uncertainty, there are often no clear answers to people's questions. Second, scientific knowledge expands fast in many highly specialized subfields. Due to the resulting division of cognitive labor, laypeople's understanding of science (content knowledge) and *about* science (procedural knowledge) is necessarily bounded. But how can laypeople successfully engage with scientific information – which they often access online – despite their bounded understanding of science and while being confronted with complexity and uncertainty? In order to make up their mind about a socio-scientific issue, a person could deliberate *whom to trust*. This means that a person could assess whether an expert possesses expertise, integrity and benevolence making the expert a trustworthy source of knowledge. In my talk, I will provide a conceptual framework of epistemic trust. Especially, I will focus on one aspect of people's (online) engagement with scientific information, namely how people's assessments regarding the trustworthiness of information sources are affected by the disclosure of uncertainty in scientific information. The empirical evidence I will present has immediate implications for education: How does epistemic trust play into people's functional scientific literacy? And how could learners' informed trust decisions be supported in education as well as through science communication?

### **Keynotes 2**

19 August 2021 13:30 - 14:30

Auditorium B

JURE 2021 Keynote

#### **"The Pale Blue Dot": Learning across time & space**

**Keywords:** Physical Sciences, Science Education, Social Sciences, Synergies between Learning; Teaching and Research

**Interest group:**

**Chairperson:** Rimma Nyman, University of Gothenburg, Sweden

In this keynote talk I will draw on the work of astronomer Carl Sagan to consider questions of time and space in relation to doing educational research during a planetary crisis. In so doing my aim is to consider the possibilities of unsettling human-as-subject boundaries in teaching and learning across time and space. Different notions of time will be used as an epistemological lens through which to meet the "post-normal" spectre that haunts modern classrooms: What is education *for*?

#### **"The Pale Blue Dot": Learning across time & space**

**Presenting Author:** Dawn Sanders, University of Gothenburg, Sweden

In this keynote talk I will draw on the work of astronomer Carl Sagan to consider questions of time and space in relation to doing educational research during a planetary crisis. In so doing my aim is to consider the possibilities of unsettling human-as-subject boundaries in teaching and learning across time and space. Different notions of time will be used as an epistemological lens through which to meet the "post-normal" spectre that haunts modern classrooms: What is education *for*?

### **Session F 1**

20 August 2021 09:00 - 10:00

Session Room 4

Single Paper

Higher Education, Motivational, Social and Affective Processes

#### **Competencies**

**Keywords:** Achievement, Competencies, Higher Education, Literacy, Motivation, Quantitative Methods, Secondary Education, Self-regulation, Vocational Education, Workplace Learning

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

**Chairperson:** Hoda Ashjari, University of Gothenburg, Sweden

#### **Cognitive and non-cognitive factors of academic achievement: the role of soft skills**

**Keywords:** Achievement, Competencies, Motivation, Self-regulation

**Presenting Author:** Tommaso Feraco, Università degli Studi di Padova, Italy; **Co-Author:** Dario Resnati, Pentathlon Srl, Italy; **Co-Author:** Davide Fregonese, Pentathlon Srl, Italy; **Co-Author:** Chiara Meneghetti, University of Padova, Italy

**INTRODUCTION** The impact of non-cognitive factors such as soft skills on academic achievement is still a strong debated issue. Given the practical importance that soft skills are obtaining in both the labour market and national and international councils for education, in the current study we examined those characteristics that should distinguish potentially good future workers and actual students integrating these with the main psychological models of academic achievement. **METHOD** A sample of 642 students between 10 and 18 years old was enrolled considering 6 personal soft skills (i.e. adaptability, personal initiative, perseverance, curiosity, leadership and social awareness), cognitive abilities (i.e. reasoning, problem solving, mental rotation, updating and critical thinking), scholastic motivation and self-regulation strategies as predictors of academic performance (teachers' evaluation). A measure of extra-curricular activities (sport, music, hobbies and social activities) was also included in the analysis to investigate its effect on the development of soft skills and cognitive abilities. **RESULTS** Data were analysed using model selection on Structural Equations Model for observed variables (i.e. path analysis). The results showed a direct effect of cognitive factors, motivation and self-regulation on scholastic achievement, while no direct effect of soft skills was found. Soft skills showed to be strongly related to motivation and self-regulation and both these variables mediated their effect on academic performance. Moreover, extra-curricular activities resulted influencing soft skills but not cognitive abilities. **CONCLUSIONS** Overall, these results show the remarkable role that soft skills have during school age as they resulted highly positive predictors of scholastic motivation and strategies. Soft skills appear to be unrelated from cognitive abilities, which have the strongest direct relation with scholastic achievement.

#### **How higher education facilitates students' transition to the labor market**

**Keywords:** Competencies, Higher Education, Vocational Education, Workplace Learning

**Presenting Author:** Niels van der Baan, Maastricht University School of Business and Economics, Netherlands; **Co-Author:** Inken Gast, Maastricht University, Netherlands; **Co-Author:** Simon Beusaert, Maastricht University, Netherlands; **Co-Author:** Wim Gijselaers, Maastricht University, Netherlands

The transition to the labour market marks an important turning point in the lives of recent graduates, and an unsuccessful transition can have long term effects for the individual. The transition period can be seen as a process, rather than a single event, in which higher education and the workplace form both ends on the same continuum. The transition begins with the preparation phase in higher education and only ends with job stabilization at the workplace. It is thus the primary responsibility of higher education to prepare students to take the first step into the labour market. Taking different perspectives, such as the transfer, connectivity

and boundary crossing perspective, higher education has implemented various pedagogical and didactical interventions aiming at supporting students in their transition to the labour market. However, no comprehensive overview and little empirical evidence seems to exist to evaluate the effectiveness of these intervention aimed at facilitating students' transition to the labour market. Therefore, the present study aims to systematically review the literature on intervention and their effectiveness in stimulating students' transition. Results of the present study will be used to identify best practices for transition interventions and concrete guidelines for implementing transition interventions can be distilled.

#### **Examining the Interconnection between Health Literacy and Family Background among Adolescents**

**Keywords:** Competencies, Literacy, Quantitative Methods, Secondary Education

**Presenting Author:** Dominik Pendl, University of Graz, Austria

Seen as a public health goal, health literacy is linked to general literacy and means the competence to access, understand, appraise, and apply health information. Since health-related information is increasingly obtained from the internet, especially among younger people, it is necessary that people need to know how to deal with electronic health resources and think critically about the information provided. Previous research identified socio-economic and cultural factors as relevant factors influencing health related knowledge and communication. Therefore, it seems necessary to consider the influence of family background on health literacy, i.e., the competent dealing with health information, particularly in children and adolescents. The aim of the present study was to examine the relationship between general health literacy, critical health literacy and internet related health literacy on one side, and socio-economic and cultural factors (i.e., the parents' employment status and educational level, number of books in the household, the country of birth of the parents and the child as well as the home language). Therefore, data were collected from 689 students aged 12 to 14 years regarding their general health literacy (HLS-EU), internet-related health literacy (eHEALS), and critical health literacy (CLAIM). The results of these study showed that the migration background, the home language and the number of books at home are crucial factors for developing health literacy particularly in children and adolescents.

#### **Session F 2**

20 August 2021 09:00 - 10:00

Session Room 3

Single Paper

Instructional Design, Learning and Special Education, Teaching and Teacher Education

#### **Computer-Assisted and Multimedia Learning**

**Keywords:** Computer-assisted Learning, Experimental Studies, Instructional Design, Learning Approaches, Lifelong Learning, Multimedia Learning, Problem Solving, Reflection, Secondary Education, Student Learning, Writing/Literacy

**Interest group:** SIG 06 - Instructional Design, SIG 12 - Writing, SIG 18 - Educational Effectiveness and Improvement

**Chairperson:** Prajakt Pande, Denmark

#### **Example-Based Learning: Can Closed-Open-Book Prompts enhance Learning Success?**

**Keywords:** Computer-assisted Learning, Experimental Studies, Instructional Design, Student Learning

**Presenting Author:** Niklas Obergassel, Ruhr University Bochum, Germany; **Co-Author:** Julian Roelle, Ruhr University Bochum, Germany

As a powerful approach to introduce new learning content, example-based learning typically entails that learners are presented basic instructional explanations, followed by illustrative examples. To ensure the effectiveness of this procedure, it has been proven essential to provide prompts that elicit principle-based self-explanations. Typically, these prompts are implemented in a closed-book format, which does not grant access to the basic instructional explanations while self-explaining. Compared to an open-book format, which grants full access to the basic instructional explanations, a closed-book format thus usually raises a retrieval hurdle that reduces the number of correctly generated principle-based self-explanations. However, a complete elimination of this retrieval hurdle, as done in an open-book format, likely is also not ideal, since a retrieval hurdle engages learners in retrieval practice which fosters long-term learning. Thus, in the present study, we were interested in whether a format of self-explanation prompts, that first (like a closed-book format) denies and then (like an open-book format) provides learners with access to the basic instructional explanations to overcome a possible retrieval hurdle, would be more beneficial for learning than an open-book or a closed-book format. We addressed this issue in an experiment with  $N = 86$  eighth grade high-school students. All participants processed self-explanation prompts in two rounds with either full access to the instructional explanations (open-book format), no access (closed-book format), or no access in a first but full access in a second round (closed-open-book format). We found that the closed-open-book format did not result in higher learning outcomes than the closed-book or the open-book format. Thus, we conclude that the drawbacks that a closed-book or an open-book format of prompts pose for the generation of principle-based self-explanations or retrieval practice, cannot be simply overcome by combining both formats in a closed-open-book format.

#### **Writing Business Letters with „Self-Regulated Strategy Development“ in Secondary Schools**

**Keywords:** Computer-assisted Learning, Learning Approaches, Secondary Education, Writing/Literacy

**Presenting Author:** Winnie-Karen Giera, Institut für Germanistik, University Potsdam (Germany), Germany

Writing is a key competence and a part of lifelong learning for citizens (OECD, 2013; European Union, 2006). Professional employees with business-writing skills on computer are indispensable for the job market. So, at the end of school, young people should be able to write texts on computer that are appropriate to the target group, comprehensible, coherent, and structured. But there is a lack of intervention studies focusing on writing in the interface between school and vocational training. This dissertation project was designed as a long-term intervention (11 weeks) with pretest-posttest-control group design in whole classes with ninth-grade students ( $n = 77$ ), and with trainees ( $n = 26$ ) to fill an empirical gap in writing business letters. During this pre-vocational writing project (one time per week 90 minutes) I used the "self-regulated strategy development" approach (Graham & Harris, 2017). The students' writing products (548 texts) were collected by four assignments, and were double-blind coded (holistic and analytic codings) by raters. The coded text quality results were statistically combined with the data of the questionnaires (1,269), video/audio recordings, and keystroke loggings with Inputlog (Leijten & Van Waes, 2013). One research question was: What writing skills do students have when writing business letters using the "SRSD" approach? The intervention group wrote more words between pre- and post-test ( $M = 124/174$ ) than the control group ( $M = 124/117$ ,  $p$

#### **Pedagogical beliefs on the possibilities of developing student's fact-checking skills**

**Keywords:** Lifelong Learning, Multimedia Learning, Problem Solving, Reflection

**Presenting Author:** Annamária Ablonczy-Bugris, University of Szeged, Doctoral School of Education, Hungary

Information has been an enormous force in the hands of humanity throughout history, especially in our age, when we live in a world where technology provides us with information in a matter of seconds (Malita & Grosseck, 2018). Internet access and smartphones are no longer a privilege. We can access any information anywhere, be it real or fake. However, new tools can have not only benefits but negative consequences: they can jeopardise the physical, mental, and social well-being of careless users (Duke & Montag, 2017). Given all this, it is not surprising that recent studies are emphasising the reduction and prevention of problematic behaviours related to the Internet and digital devices (Throuvala et al., 2019). In contrast to previous generations, digital natives have fundamentally different opportunities for accessing information (Oblinger & Oblinger, 2005), which brings forth new challenges and opportunities in their education. These challenges include mastering effective information analysis, understanding and conscious use of fact-checking. The presentations' aim is to provide a theoretical basis for our questionnaire research that explores pedagogical views and opinions about the assessment of the authenticity and reliability of the information, the assessment of the need for student development, and possible directions. The research seeks to answer the questions of (1) what role educators attach to the design and development of critical information-analytical skills, (2) how they see the role and significance of judging information from different sources, and (3) the related development opportunities in- and outside the classrooms.

#### **Session F 3**

20 August 2021 09:00 - 10:00  
Session Room 6  
Single Paper  
Teaching and Teacher Education

#### Teaching and Teacher Education

**Keywords:** Artificial Intelligence, Competencies, Computer-assisted Learning, Pre-service Teacher Education, Qualitative Methods, Secondary Education, Teacher Effectiveness, Teacher Professional Development, Teaching Approaches, Teaching/Instruction, Video Analysis

**Interest group:** SIG 11 - Teaching and Teacher Education

**Chairperson:** Rimma Nyman, University of Gothenburg, Sweden

#### Topic Modeling of Student Contemporary Perceptions of Teaching Behavior: Does It Offer New Insights?

**Keywords:** Artificial Intelligence, Secondary Education, Teacher Effectiveness, Teaching/Instruction

**Presenting Author:** Bilge Gencoglu, University of Groningen, Netherlands; **Co-Author:** Michelle Helms-Lorenz, University of Groningen, Netherlands; **Co-Author:** Ridwan Maulana, GION - University of Groningen, Netherlands; **Co-Author:** Ellen Jansen, University of Groningen, Netherlands; **Co-Author:** Oguzhan Gencoglu, Top Data Science, Finland

Various effective teaching behavior domains that contribute to students' achievements have been identified empirically based on different assessment procedures. However, comprehensive student views of teaching behavior are lacking partly because open-ended questions are not frequently included in past studies. Difficulties in analyzing open-ended questions from large-scale student surveys might explain this trend. The present study undertakes to integrate the application of a machine learning tool to the education field to explore secondary education students' perceptions of teaching behavior, based on large-scale open-ended answers. A total of 173,858 secondary education students were surveyed, using an open-ended questionnaire in The Netherlands. After applying topic modeling analysis, the results showed that machine learning analyses yielded eight topics of teaching behavior domains. The differences and similarities between the extracted teaching behavior topics and domains in the literature are discussed, using the bottom-up (machine learning analysis) and top-down (suggested in the literature from survey analysis) approach. The possible added value of applying machine learning in this study is discussed, including (a) the easiness (non-laborious) and practicality to analyze large-scale open-ended questions to extract teaching behavior topics reported by students, (b) the possibility to make a comparison of these prevailing topics with the existing literature in the field, and (c) the possibility to identify trends over time.

#### Teacher Educators' Perceptions on Flipped Classroom in Teacher Education for EFL Students

**Keywords:** Computer-assisted Learning, Pre-service Teacher Education, Qualitative Methods, Teaching Approaches

**Presenting Author:** Han Han, Norwegian University of Science and Technology (NTNU), Norway; **Co-Author:** Fredrik Mørk Røkenes, Norwegian University of Science and Technology (NTNU), Norway

**Abstract:** Flipped Classroom (FC) has been popular in education since the 2000s and there has been a steady increase in the number of studies on FC in teacher education since 2014. However, researchers tend to be more concerned with student teachers' perceptions on FC whereas few scholars focus on teacher educators' perspectives on FC. Through interviews, this article explores the perceptions of 10 teacher educators regarding the use of FC with student teachers in the field of English as a foreign language (EFL). The qualitative data transcribed from the 10 in-depth interviews are analyzed based on thematic analysis approach. Four themes (new opportunities for teaching and learning, out-of-classroom activities in FC, in-classroom activities in FC and student teachers' feedback) related to teacher educators' experiences with FC, three themes (flexible preparations for student teachers, efficient time for active learning, possibility of reusing materials) regarding teacher educators' positive perceptions on FC, and three themes (limited preparations from student teachers risk of poor attendance, time-consuming) in regard to teacher educators' negative perceptions on FC are generated. This article contributes to our understanding of FC in teacher education with providing viewpoints from teacher educators' perspective.

#### Effects of mobile eye tracking videos on the perception of classroom management

**Keywords:** Competencies, Pre-service Teacher Education, Teacher Professional Development, Video Analysis

**Presenting Author:** Leonie Telgmann, Leibniz University Hannover, Germany; **Co-Author:** Katharina Mueller, Leibniz University Hannover, Germany; **Co-Author:** Kathleen Stürmer, University of Tübingen, Germany; **Co-Author:** Tina Seidel, Technische Universität München, Germany; **Co-Author:** Kai Cortina, University of Michigan, Germany

Teaching situations, recorded using mobile eye tracking (MET), show the teacher's field of vision, thus, exact movements of the head and eyes can be observed. The current study explores the use of MET videos in comparison to standard classroom videos in the context of perceiving classroom management and investigates the effect of MET videos on the ratings of trained observers. The research questions is: How do mobile eye tracking videos affect trained observers' perception of classroom management? To answer this question, external observers assessed the classroom management of six pre-service teachers through different camera perspectives, using a high-inference rating as well as low-inference coding manual. Findings show that trained observers viewing MET videos code significantly more classroom management events related to the dimension *withitness* compared to the same video viewed from a student and teacher camera (SC/TC) perspective. For other dimensions, we found no significant difference in the rated classroom management. Relating to these results the potential of MET videos is highlighted and possibilities for using them in teacher education for training classroom management skills and for research purposes are discussed.

#### Session F 4

20 August 2021 09:00 - 10:00  
Session Room 2  
Single Paper

Assessment and Evaluation, Motivational, Social and Affective Processes

#### Assessment Methods and Tools

**Keywords:** Assessment Methods and Tools, Conversation/Discourse Analysis, Emotion and Affect, History, Qualitative Methods, Quantitative Methods, Secondary Education, Self-regulation, Video Analysis

**Interest group:** SIG 01 - Assessment and Evaluation, SIG 16 - Metacognition, SIG 26 - Argumentation, Dialogue and Reasoning

**Chairperson:** Panagiota Christodoulou, University of Western Macedonia, Greece

#### Degrees of epistemic dialogism in 'high stakes' History curriculum discourse in England

**Keywords:** Assessment Methods and Tools, Conversation/Discourse Analysis, History, Secondary Education

**Presenting Author:** Siobhan Dickens, University of Cambridge, UK, United Kingdom

This presentation will outline how different forms of discourse act to confer or deny students and teachers access to disciplinary dialogues with and about historical knowledge in the official History curriculum linked to high stakes assessments in England. Three distinct discursive figured worlds will be presented, identified through a Critical Discourse Analysis of five syllabus documents encompassing all available options for 16-18 year olds studying History in England. These figured worlds represent competing visions for what school history 'is', with visible consequences for the degree to which students are encouraged and enabled to take a critical stance toward historical knowledge, and the extent to which they are discursively 'allowed' access to disciplinary epistemic dialogues. These figured worlds are educationally significant because, due to the high stakes attached to official curricula and assessments, they create boundaries around the nature and degree of epistemic dialogic space that teachers can generate in the classroom. They are societally significant because they confer or deny epistemic tools and orientations which are crucial for critical, agentic participation in public historical narratives, thus shaping future citizenship. The research

contributes answers to the question of why epistemically dialogic classrooms can be hard to realise, and adds to our understanding of connections between curriculum, standardised assessments and dialogic education.

#### **How oral exams in Norwegian secondary schools are carried out and implications for validity**

**Keywords:** Assessment Methods and Tools, Qualitative Methods, Secondary Education, Video Analysis

**Presenting Author:** Marte Sjøve Syverud, University of South-Eastern Norway, Norway

Oral exams are high-stakes and final tests that hold longstanding traditions in school systems around the world, including Norway and the Scandinavian countries. However, they have attracted very little empirical research, and knowledge about how these exams are carried out within the Norwegian context are scarce. Based on video-recordings of 36 disciplinary oral competence exams (DOCEs) in the subject Norwegian, this study explores how DOCEs are carried out in four Norwegian secondary schools and discusses how variation in practice may affect the validity of these exams. Using thematic analysis, the study identifies the content of the DOCEs, in terms of the overall organisation (activity phases) and the time spent on the different phases. Findings reveal that DOCEs consist of five main phases clearly structured chronologically. Both time spent on the different phases and curriculum topics covered during the DOCEs on the other hand, varies. This has implications for validity and might imply that students are not given the same opportunity to demonstrate achievement during DOCEs.

#### **Hungarian adaptation of the Five Facet Mindfulness Questionnaire and pilot-study in 10th grade**

**Keywords:** Assessment Methods and Tools, Emotion and Affect, Quantitative Methods, Self-regulation

**Presenting Author:** Imola Budis, University of Szeged, Doctoral School of Education, Hungary

Mindfulness is a rather new research area in Hungary and there isn't any research in the field of education regarding this phenomena. In the research the trait mindfulness conceptualization was used. Those students who have higher levels of mindfulness could more effectively enhance and manage their own efforts. Also, they could better regulate their cognitive and affective factors in order to reach their goals and improve their skills (Hillgaard, 2011; Opelt & Schwinger, 2020). The Five Facet Mindfulness Questionnaire (FFMQ-24) instrument was adapted by us. It was translated into Hungarian language by professional translators with the use of back-translation method. A pilot-study in 10th grade (n=82) was accomplished in order to examine the reliability and validity of the questionnaire. The statistical analyses were made by the SPSS, Jamovi and SmartPLS3 programs. The Cronbach- $\alpha$  values of the whole questionnaire (0.658) and the subscales ( $\alpha=0.575$  to 0.831) indicate that further development is needed for good reliability. On the other hand the confirmatory factor analysis and the composite reliability values show that the factor structure, the internal consistency of the adapted instrument is appropriate. The RMSEA value (0.075) also indicate a good fit. The mindfulness questionnaire has specific terminology (e. g. beliefs, sensations, distressing, awareness) and a lot of reversed items, therefore the translation of some statements should be reconsidered. In the future, as the result of our adaptation process, we would like to provide a reliable and valid mindfulness instrument for the Hungarian educational measurements and teaching practice.

#### **Session F 5**

20 August 2021 09:00 - 10:00

Session Room 5

Single Paper

Educational Policy and Systems, Higher Education, Learning and Social Interaction

#### **Educational Policy**

**Keywords:** Citizenship Education, Conversation/Discourse Analysis, Cooperative/Collaborative Learning, Educational Policy, Educational Psychology, Higher Education, Multicultural Education, Qualitative Methods, Secondary Education

**Interest group:** SIG 04 - Higher Education, SIG 10 - Social Interaction in Learning and Instruction, SIG 13 - Moral and Democratic Education

**Chairperson:** Sally Gutierrez, Philippines

#### **Framing student group work in an individual and merit-oriented policy context**

**Keywords:** Cooperative/Collaborative Learning, Educational Policy, Qualitative Methods, Secondary Education

**Presenting Author:** Christine Rendahl Stenersen, University of Southeast Norway, Norway

This paper presents an empirical, qualitative study of authentic teacher-initiated student group work in the context of six Norwegian lower secondary classrooms. The analysis draws on the theory of social interdependence (Deutsch, 1949; Johnson & Johnson, 1992) and empirical work on student group work to illuminate conditions that affect the outcomes of student group work. The study follows a teaching and learning trajectory of three phases: the introduction phase, the group work phase, and the assessment phase. The data material includes video recordings, audio recordings and student working materials. The aim of the study is to address the complexity and contradictions in framing student group work within the transnational individual and merit-oriented policy context that frames the school's activities. Findings display that the group work is framed by comprehensive and potentially conflicting goals, quoted from the national curricula in the introduction phase. These goals relate to both individual outcomes and collaborative outcomes. In the group work phase, tensions arise when the students try to interpret and balance both the collaborative and the individual goals. The teacher responds by re-framing the group work by instructing the students in an individualistic manner. Further, the analysis shows that the collaborative goals is again emphasised in the teachers framing of the group work during the assessment phase. Tensions between goals related to collaboration, like sharing knowledge, helping, and contributing to the work, and individual goals, like showing obtained knowledge of the individual students were prominent during the assessment phase. The study contributes with knowledge that implicates teachers work with student group work and the pedagogies and policies that advocates this form of working in schools.

#### **Citizenship education and nationalism in Chile: the problematization of immigration**

**Keywords:** Citizenship Education, Conversation/Discourse Analysis, Educational Policy, Multicultural Education

**Presenting Author:** Rodrigo Velásquez, Pontificia Universidad Católica de Chile, Chile

Traditionally, citizenship education seems to be a solution to some social problems. For instance, citizenship education would strengthen social cohesion in contexts of increasing immigration. Unlike these traditional approaches, this study analyzes how citizenship education contribute to shape immigration as a problem. I present the case of Chile to explore conditions under which immigration was produced as a pedagogical "problem". Based on a post-critical framework that understands education policy as a discourse that produces social reality and Foucauldian "problematization" as methodology, the study analyzed Social Studies programs, released by the MINEDUC, pertaining to four national educational reforms in Chile (i.e., those of the 1960s, 1980s, 1990s and 2010s), as well as political statements regarding immigration. Findings show that Social Study programs shifted immigration from a historical phenomenon that enhanced the civilization process in the past to a contemporary pedagogical problem of social inclusion. This shift was possible due to discursive practices regarding "the cultural composition of the nation". Such discourses sketched an immigrant-free national community, which would assimilate immigrants without disrupting its "essence". However, the new neoliberal practices of the 1990s prompted a hesitation over "the cultural composition of the nation". Therefore, through Social Studies programs, citizenship education works as a technology to differentiate between immigrants and citizens and constituted immigration as a neoliberal-nationalistic "problem".

#### **Do different selection criteria gain students with different matriculation examination results?**

**Keywords:** Educational Policy, Educational Psychology, Higher Education, Secondary Education

**Presenting Author:** Jenni Kunnari, University of Oulu, Finland; **Co-Author:** Jouni Pursiainen, University of Oulu, Finland; **Co-Author:** Hanni Muukkonen, University of Oulu, Finland

This paper explores the tests taken and grades attained in the national matriculation examination (ME) between accepted and rejected teacher education (TE) applicants at one Finnish research-based university. The applicants applied to TE in 2015, 2016, 2019, and 2020 (N = 7,958) and were admitted the right to study based on different selection criteria. The applicants in 2015, 2016, and 2019 were mainly evaluated based on entrance tests while the applicants in 2020

were mainly evaluated with merit-based criteria, their ME results. A university admission reform took place in spring 2020 and since that the applicants ME results has been emphasized in admission to Finnish universities. In this study, we investigate with statistical analysis the differences in ME results among accepted and rejected applicants between years. The applicants had most often taken the tests, besides in obligatory mother tongue, also in advanced level English, basic mathematics, psychology, and health education. The accepted applicants succeeded on average with higher grades in these subjects. Results indicate that there were differences between accepted and rejected applicants ME results within these years. Results are discussed considering the applied selection criteria before and after the reform.

#### Session F 6

20 August 2021 09:00 - 10:00

Session Room 1

Single Paper

Educational Policy and Systems, Motivational, Social and Affective Processes, Teaching and Teacher Education

#### Language (Foreign and Second)

**Keywords:** Citizenship Education, Educational Policy, Higher Education, Language (Foreign and Second), Learning Technologies, Motivation and Emotion, Qualitative Methods, Teacher Professional Development

**Interest group:** SIG 08 - Motivation and Emotion, SIG 13 - Moral and Democratic Education

**Chairperson:** Mengsi Liu, The University of Tokyo, Japan

#### Conceptualizations of democracy and citizenship in curriculum

**Keywords:** Citizenship Education, Educational Policy, Language (Foreign and Second), Qualitative Methods

**Presenting Author:** Tiril Finnanger, University of South-Eastern Norway, Norway

Democratic citizenship has been part of educational systems for a long time. Recently, international policy initiatives have been introduced to promote tolerance, peace and democracy, and most countries in Europe have included citizenship education as part of their national curricula (DeCoster et al. 2017). In the past years, the Norwegian school system has undergone a curriculum reform, which resulted in the implementation of a new national curriculum for primary and secondary schools in 2020, called The Knowledge Promotion Reform (LK20), which includes *democracy and citizenship* as an interdisciplinary topic to be taught across subjects and years. One of the subjects that has been given the responsibility of teaching *democracy and citizenship* is the English subject. In research, there have been made connections between citizenship and language education (Byram, 2008). However, the language subjects in Norway have not traditionally been explicit carriers of topics like these. The aim of this study is to gain more insight into how the English subject is intended to contribute to the goal of educating democratic citizens by gaining an understanding of how these issues are conceptualized in the curriculum. The following research question is investigated: *How is Democracy and citizenship conceptualized in the LK20 curriculum? In what ways have the conceptualizations changed during the development process before the curriculum was implemented?* The study draws on curriculum theory and citizenship theory, and analyzes key policy documents, curriculum drafts and the Norwegian LK20 curriculum for the English subject. Preliminary findings indicate that the Norwegian national curriculum for the English subject conceptualizes democracy and citizenship within the frames of intercultural competence, but also critical thinking and reading and writing skills. The study can contribute to a greater understanding of how democratic citizenship is taught in Nordic foreign language education.

#### Students' attitude towards communication in a foreign language classroom

**Keywords:** Higher Education, Language (Foreign and Second), Motivation and Emotion, Qualitative Methods

**Presenting Author:** Jaroslava Jelinkova, Masaryk University, Czech Republic

Classroom communication and interaction play a vital part in second language acquisition (Hymes 1971; Swain 1985). By creating opportunities for authentic communication, the students' interaction language learning is supported (Ellis et al. 1994; Kuhl et al. 2003). It is Willingness to Communicate (WTC) that describes the intention of a person to communicate with others if given the opportunity. So far not many studies have examined the role of the learner's perceptions of classroom interaction and the role of classroom communication from the point of view of a learner. Therefore, the purpose of the present study is to investigate the perception of classroom interaction in the target language students' willingness to communicate in the class, and their motivation to get involved in the classroom interaction. The qualitative data were gathered at the end of a semester by the form of semi-structured interviews with selected students. The students were selected based on their performance and interaction during the lesson by their teachers and the interview was conducted by a researcher, not the teacher. They were the extreme examples of both students who participated actively in the class and students who were inactive during the lessons (n=9). Throughout the analysis based on open coding several relevant areas emerged, particularly students' unwillingness to communicate, teaching methods, motives for learning, and motives for classroom communication in connection with the role of a teacher. The fear of making mistakes followed by negative feedback can be named as the most significant obstacles in classroom communication as reported by the respondents. On the other hand, factors supporting the willingness of students to participate in classroom communication are e.g. student's personal interest in the topic of communication, perceived support either from the teacher or the class, or the student's self-confidence in being prepared for the interaction.

#### Navigating the digital text landscape: EFL teachers as digital curators

**Keywords:** Language (Foreign and Second), Learning Technologies, Qualitative Methods, Teacher Professional Development

**Presenting Author:** Marthe Pande-Rolsen, Norwegian Univ. of Science and Technology, Norway

In today's contemporary digital society there is an abundance of digital content available everywhere, thus making everyone a participant and creator within this digital culture, and not just merely a consumer (Boileau, 2015; Erstad, 2015; Ungerer, 2016). Digital curation can offer a systematic approach as well as a pedagogical strategy for collecting, critically evaluating and engaging with such digital content. This paper presents a qualitative case study of in-service English teachers' experiences of curating digital content for a subject-specific topic in English (as a foreign language) using the tool *elink*. The purpose of the study is to investigate how the teachers experience navigating the digital text landscape through the process of digital curation. This study focuses primarily on the teacher as curator because the "[teachers'] increased capability to access content provides new mechanisms for student engagement, personalized learning, and collaboration with others" (Sharma & Deschaine, 2016, p. 73). Digital Curation is an "intentional process of mindfully mining, organizing, and archiving digital resources" (Sharma & Deschaine, 2016, p. 73). However, curation is more than just collecting digital content, as it also involves an *active* process of customizing, critically evaluating and communicating this content (Mills, 2013; Mihailidis, 2015; Potter & McDougall, 2017). Moreover, digital curation is a way of understanding and producing content while working digitally, which in turn can encourage teachers to start a critical evaluation of sources they retrieve online for use in their own classrooms. Preliminary findings show an overall positive attitude towards digital curation, and the participants see the process as active, relevant, and valuable to their profession. Further, the participants show an awareness of the potential of using digital content for language learning purposes, while at the same time acknowledging and highlighting the importance of critical evaluation and conceptualizing of the digitally curated content.

#### Session F 7

20 August 2021 09:00 - 10:00

Session Room 10

Single Paper

Learning and Instructional Technology

#### Mixed-method Research

**Keywords:** Higher Education, Learning Technologies, Mixed-method Research, Multimedia Learning, Student Learning, Technology

**Interest group:** SIG 07 - Technology-Enhanced Learning And Instruction, SIG 27 - Online Measures of Learning Processes

**Chairperson:** Iida Vedenpää, University of Helsinki, Finland

### **Exploring university students' ecologies of digital resources in disciplinary learning**

**Keywords:** Higher Education, Mixed-method Research, Student Learning, Technology

**Presenting Author:** Dan Uehara, University of Oslo, Faculty of Education, Norway; **Co-Author:** Crina Damsa, University of Oslo, Norway; **Co-Author:** Lise Henriksen, University of Oslo, Faculty of Education, Norway

In the current online education context, students' use of digital technologies for studying and learning is of crucial importance. We examine the way university students use and value digital technologies they use for studying and learning. Our study distinguishes between institutionally provided digital technologies and digital technologies students access and use on their own initiative, attempting to surface students' extended ecologies of digital tools and resources; and between use by students from four disciplinary programs. Participants in this mixed-methods exploratory study were undergraduate and graduate students enrolled in study programmes in philosophy, informatics, educational sciences and teacher education at a research-intensive university. The dataset consisted of survey reports on use of digital technologies, group interviews and a mini-ethnography that prompted students' in-depth reflections about digital technology use and its role in their study-related activities. The findings from quantitative analysis suggests the number of tools students use is not dependent by which study program they are in or their gender and age. Second, LMS is the most used institutional tool, while social media (i.e. Facebook) is the most used non-institutional tool. Students in teachers education have many uses for Canvas compared to the other three programs. The findings show a pattern in the use of institutionally provided and self-accessed technologies, and the fact that students themselves must generate mediating value from their interaction with these technologies. These findings invite further research about how digital technologies are intertwined with students' academic and non-academic activities, use of digital technologies, and how more attention should be given to support students' 'customization' efforts when creating their ecologies of digital technologies for studying and learning.

### **Mapping levels of processing in learning from video: A trace data study followed by a cued recall.**

**Keywords:** Learning Technologies, Mixed-method Research, Multimedia Learning, Student Learning

**Presenting Author:** Marijn Gijzen, University of Antwerp, Belgium; **Co-Author:** Leen Catrysse, Open Universiteit Nederland, Netherlands; **Co-Author:** Sven De Maeyer, Antwerp University, Belgium; **Co-Author:** David Gijbels, University of Antwerp, Belgium

Current empirical research on levels of processing in higher education has mainly focused on learning from text with the use of self-report instruments. However, research examining differences in levels of processing during learning from video is rather limited. Moreover, research using more direct and online measures to examine differences in levels of processing is limited as well. In our exploratory experiment, we used trace data, corroborated by a cued retrospective recall, to map differences in levels of processing in the context of learning from video. The design of the study was based on earlier eye-tracking research on learning from expository texts. Twenty higher education students participated in our study. Results suggest that, students steered to use more deep levels of processing looked longer at sequences indicative of key information and processed both details and key information in a more deep way. Students in the surface condition looked longer at details and factual knowledge while also repeating these sequences more. The combination of trace data and cued-recall data proves to be promising in advancing our understanding on levels of processing in the context of learning from interactive instructional videos since not all differences regarding levels of processing are present in trace data. By incorporating this type of multi-method design, the amount of inferences that need to be made based on the behavioural data can be reduced.

### **Session G 1**

20 August 2021 10:15 - 11:15

Session Room 4

Poster Presentation

Motivational, Social and Affective Processes, Teaching and Teacher Education

#### **Attitudes, Beliefs and Motivation**

**Keywords:** Attitudes and Beliefs, Cognitive Skills, Educational Attainment, Educational Psychology, Mathematics, Mixed-method Research, Motivation, Qualitative Methods, Researcher Education, Self-regulation

**Interest group:** SIG 08 - Motivation and Emotion, SIG 11 - Teaching and Teacher Education

**Chairperson:** Jolan Hanssens, KU LEUVEN, Belgium

### **How Do Mathematics Motivations Explain Attainment of a Mathematical or Life Science Degree?**

**Keywords:** Educational Attainment, Educational Psychology, Mathematics, Motivation

**Presenting Author:** Lili Toh, University of Sydney, Australia; **Co-Author:** Helen Watt, The University of Sydney, Australia

Gendered participation in science, technology, engineering and mathematics (STEM) fields remains a pressing concern, for reasons of gender equity. Although women have made progress in entering certain fields of science such as the life sciences (LS), they remain severely underrepresented in the physical sciences, mathematics, engineering and technology (PMET). Mathematics has been identified as an underpinning discipline that filters entry into other fields, such as PMET. Mathematics motivations such as self-concept of ability (SCA) and subjective task values (STV) have been heavily studied within the secondary school setting. However, fewer studies have evaluated how these secondary school motivations are linked to the next phase of career development; undergraduate degree attainment. Utilising longitudinal data to capture participants' high school motivations and actual undergraduate degree attainment, the current study made key contributions by first examining how secondary school mathematics motivations explain attainment of undergraduate qualifications in disaggregated STEM fields (PMET or LS) compared to non-STEM, using actual undergraduate degree attainment, over and above grade 9 mathematics achievement and perceived science talent. Secondly, the current study examined how these motivational processes may differ by gender. Only data from retained participants of the STEPS study who reported attaining undergraduate degrees were analysed (N = 212, 53.3% women). Participants' ages at the time of follow-up ranged from 31-38 years (M = 32.77 years, SD = 1.06). The sample came from 376 participants retained in the STEPS Study at the follow-up online survey (2015-2019) approximately 20 years later than their latest secondary school timepoint (latest grades 9, 10, 11; 1995-1998). Key findings suggest STV plays an important role in predicting future choices such as PMET degree attainment, for both boys and girls. To improve gender equity in PMET fields, greater effort should be taken to increase girls' mathematics STV in secondary school.

### **Preschool Teachers' Beliefs about the Emotional Development of Preschool Children**

**Keywords:** Attitudes and Beliefs, Educational Psychology, Qualitative Methods, Researcher Education

**Presenting Author:** Ana Fernandes, CIE - ISPA, Portugal; **Co-Author:** Lourdes Mata, CIE - ISPA, Portugal; **Co-Author:** Francisco Peixoto, ISPA - Instituto Universitário / CIE - ISPA, Portugal

The objective of preschool education is to promote the child's development in different domains and learning processes (Cardona, 2008). In order to work on these different competencies, preschool teachers use their educational intentionality, which is associated with their conceptions about their role as preschool teachers, their knowledge of the different areas of child development and how to apply that knowledge in their educational practice. Thus, investigations on preschool teachers' conceptions prove to be an added value for the knowledge of these educational processes (Errington, 2004). In this context, the present study aimed to characterize the conceptions of preschool teachers about the reasons why they consider it important to develop their children's emotional skills, what activities they use to work on emotional expression, knowledge of emotions and socially adequate regulation, and the emotions that they normally work. Sixteen preschool teachers from the Lisbon area participated in this study. Data was collected through a semi-structured interview (Kuchartz & Radiker, 2019). The results showed that all pre-school teachers refer the emotional development of their children's as being important. Despite the consensus about the importance of emotional development the reasons for its importance are less consensual. In addition, activities are more diverse in emotional expression and knowledge of emotions compared to activities of socially adequate regulation. The emotions worked on are mostly the basic emotions. The results will be

discussed in view of the theoretical references and the pedagogical implications.

#### **Attitudes, Interests, Motivation and Cognitive learning strategy use for Physics learning in Uganda**

**Keywords:** Attitudes and Beliefs, Cognitive Skills, Mixed-method Research, Motivation

**Presenting Author:**Diana Kwarikunda, Universität Potsdam, Germany; **Co-Author:**Ulrich Schiefele, Universität Potsdam, Germany; **Co-Author:**Joseph Ssenyonga, Universität Konstanz, Germany; **Co-Author:**Charles Muwonge, Mbarara University of Science and Technology, Uganda

Despite the massive investments in science education, there has been a global outcry over the poor achievement of students in science subjects and especially Physics at secondary school level. Grounded in SDT and interest theory, the present study will examine the relationships between attitudes, interest, motivation, and use of cognitive learning strategies towards learning of Physics among secondary school students over a period of one year. This longitudinal study will comprise of a sample of 2500 senior two students randomly selected from 10 secondary schools located in Masaka District, Uganda. Specifically, the study will examine: (a) trajectories in students' attitudes, interest, and motivation towards physics learning, (b) transitions within students' cognitive learning strategies profiles over time, and (c) causal relationships between attitudes, interest, motivation, and use of cognitive learning strategies towards learning of physics. The study will adopt a QUAN-qual model of mixedmethods research design. Three waves of quantitative data will be collected using a self-report questionnaire and analyzed in Mplus 8 using structural equation modeling techniques such as growth curve modeling, latent transition analysis, cross-lagged models, and multi-group confirmatory factor analyses. Two waves of qualitative data will be collected using focus group discussion guides and analyzed using thematic analysis. Findings will be useful in designing interventions to improve learning and performance in Physics in ordinary level of secondary education

#### **Supporting adaptive reactions to failure feedback: examining the role of a self talk intervention**

**Keywords:** Attitudes and Beliefs, Educational Psychology, Motivation, Self-regulation

**Presenting Author:**Helena Laudel, Dresden Technical University, Germany; **Co-Author:**Maria Neumann, Dresden University of Technology, Germany; **Co-Author:**Susanne Narciss, TU Dresden, Germany

Background: Feedback can prompt learning. However, prior research demonstrates that learners with specific characteristics, e.g. low perceived competence, are less likely to benefit from feedback after failure. This may be explained by the finding that failure feedback can be perceived as self-threatening (e.g., Eskreis-Winkler & Fishbach, 2020). We suggest, a self-talk intervention based on Nonviolent Communication (NVC, Rosenberg, 2012) might support learners in coping with failure feedback. NVC is assumed to foster self-compassion which is the ability to cope with failure in a positive way (Neff & Dahm, 2015).Objective: This project aims at (1) investigating the role of relevant learner characteristics (perceived competence and self-compassion) for reactions to failure feedback and (2) exploring how a short self-talk intervention based on Nonviolent Communication (Rosenberg, 2021) can support adaptive reactions to failure feedback.Method: A total of N = 121 participants were randomly assigned to control or experimental group. All participants took a manipulated matrices test, rated their internal feedback, then received manipulated failure feedback and rated their satisfaction. The experimental group underwent a brief self-talk intervention (self-paced) in which participants were asked to write about their current 1. observations, 2. feelings, 3. needs, and 4. a request to themselves. As outcomes working memory (2-back task) and choices of learning behavior (e.g. practice tasks, receive elaborated feedback) were included.Results: Higher scores of self-compassion significantly predicted improved internal feedback and satisfaction after failure and higher perceived competence predicted shorter reaction times in 2-back task after failure, when controlled for baseline. No significant intervention effects were observed. Discussion: This study underlined self-compassion and perceived competence as predictors for adaptive coping with failure feedback. Indications for further investigation of nonviolent communication with other outcomes will be discussed. This project may add to the understanding of processes involved in learners' reactions to failure feedback.

#### **Session G 2**

20 August 2021 10:15 - 11:15

Session Room 1

Poster Presentation

Assessment and Evaluation, Motivational, Social and Affective Processes, Teaching and Teacher Education

#### **Assessment Methods and Tools**

**Keywords:** Assessment Methods and Tools, Attitudes and Beliefs, Cognitive Skills, Content Analysis, Cooperative/Collaborative Learning, Culture, E-Learning/Online Learning, Educational Psychology, Emotion and Affect, Game-based Learning, Interdisciplinary, Mathematics, Neuroscience, Psychometrics, Self-efficacy, Video Analysis

**Interest group:** SIG 01 - Assessment and Evaluation, SIG 08 - Motivation and Emotion, SIG 11 - Teaching and Teacher Education, SIG 22 - Neuroscience and Education

**Chairperson:** Daniel Mann, Germany

#### **YouTube as a Trustworthy Confidant? A Closer Look at Educational Channels**

**Keywords:** Assessment Methods and Tools, Content Analysis, E-Learning/Online Learning, Video Analysis

**Presenting Author:**Stefan Siegel, University of Augsburg, Germany; **Co-Author:**Sebastian Streitberger, University of Augsburg, Germany

Although there is research from different disciplines on explanatory videos (e.g., regarding their purpose or quality criteria), these studies usually neglect the platforms where the videos are offered and the people responsible for these channels. In this paper we therefore present an explorative study in which we analyzed YouTube channels that show explanatory videos primarily for German school students and teachers. In a multi-step process, we selected 11 channels (e.g., simpleclub, sofaturator) for the study and developed an instrument (Analysis Grid for Educational Video Channels on YouTube; AEY) that allowed for a criteria-based, comparative analysis of those channels. Results reveal substantial differences between the examined channels with regard to their performance, monetization, transparency, advertisement, staff, target groups and quality management. The findings as well as the limitations and strengths of the study are discussed. The investigation of a larger number of explanatory video channels in follow-up studies could provide additional insights and increase the generalizability of the findings.

#### **How can we statistically gauge students' deep understanding from high school regular tests?**

**Keywords:** Assessment Methods and Tools, Educational Psychology, Mathematics, Psychometrics

**Presenting Author:**Shun Saso, The University of Tokyo, Japan; **Co-Author:**Motonori Oka, The University of Tokyo, Japan; **Co-Author:**Yuri Uesaka, The University of Tokyo, Japan

One of the goals of 21st-century skills education is to provide students with education that can help them deepen understanding (National Research Council, 2012). To accomplish this goal, we need to gauge students' deep understanding through regular tests, for example. In the current study, we propose an assessment method of deep understanding using cognitive diagnostic models (CDMs; Rupp et al., 2010) and apply this to a high school regular test. Using CDMs, we can estimate how well students have mastered the elements of cognitive abilities and skills required to solve problems. In CDMs, these abilities and skills are referred to as "attributes". We consider the elements of deeper understanding (e.g., understanding of procedure, understanding of terminology) as "attributes". The results indicate that even though two students can obtain almost the same score, one may have mastered terminology deeply, while the other may have acquired a deep understanding of procedure. In addition, clustering analysis was conducted based on estimates of attribute mastery probabilities. It demonstrated the overall features of students' understanding in the classroom. These methods can be useful for teachers when considering how to instruct target skills effectively, and they enable inspection of individual differences in students' strengths and weaknesses in learning.

#### **Assessment of Mathematical Creative Thinking Using Ethnomathematics Content**

**Keywords:** Assessment Methods and Tools, Cognitive Skills, Culture, Mathematics

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

In the 21<sup>st</sup> century creative thinking skills are needed. Theory and research have identified that mathematical creativity can lead to a different achievement assessment. Creative thinking assessed through the integration of mathematics and culture is associated with ethnomathematical content. The aims of this study pertain to how the development of mathematical creative thinking can be assessed using ethnomathematical tests, what is the relationship between mathematical creative thinking and mathematical attitudes, and what gender differences can be detected in mathematical creative thinking and mathematical attitudes?. There were 57 students (21 boys, 36 girls) by Grades 7-9 in aged 14-16 years who participated. The items tested consisted of the utilization of ethnomathematical content such as cultural, mathematical, and mathematical modelling (which is the geometry and triangle concept), and the questionnaire pertained to the participants' attitudes towards mathematics. The data collection is conducted online. Reliability is enacted by using Cronbach's Alpha test. Results indicated that (a) factor analysis and Cronbach's Alpha supported the evidence of construct-related instruments which were administered in the study; (b) enjoyment and motivation derived from a mathematics attitude had positive effects on mathematical creative thinking; and (c) mathematical creative thinking and a mathematics attitude can be detected by ethnomathematical content in Grades 7-9, both with females and males. The findings suggest that future research should continue to assess several factors which influence mathematical creative thinking.

#### **From laboratory to classroom: Assessing attention using mobile electroencephalography devices**

**Keywords:** Cooperative/Collaborative Learning, Game-based Learning, Interdisciplinary, Neuroscience

**Presenting Author:**Nathalie John, DIPF | Leibniz Institute for Research and Information in Education, Germany; **Co-Author:**Franziska Baier-Mosch, Goethe-Universität Frankfurt, Germany; **Co-Author:**Sebastian Korinth, German Institute for International Educational Research (DIPF), Germany; **Co-Author:**Mareike Kunter, DIPF | Leibniz Institute for Research and Information in Education, Germany

While the positive relationship between instructional quality (e.g. cognitive activation) and students' academic outcomes is well-studied (e.g. Kunter et al., 2013), less is known about cognitive processes such as sustained attention/cognitive engagement that mediate this relationship. The present study explores how an advanced technology called cEEGrids (i.e., electrodes integrated into adhesive patches attached around students' ears; Debener et al., 2015) combined with mobile electroencephalography devices can provide real-time and unobtrusive measures of students' cognitive states. As indicators of attention we investigate alpha band activity and inter-subject-correlation (ISC). An increase in the alpha band activity is associated with inattention (Klimesch, 2012), whereas ISC quantifies the extent to which neural patterns between participants become more similar as jointly perceived stimuli trigger similar brain processes (Hasson et al., 2008). To validate the measure ISC, we plan to replicate a pattern by Dmochowski et al. (2012) which showed ISC peaks for time points of high salience in a video clip. Furthermore, we want to validate the described indicators of neural attention in an authentic cooperative learning setting where university students work together on a group task (planned N=45) in a game-based environment and have to learn programming in order to fulfil the task. In our experimental group the setting creates positive interdependence, with students having to work together to solve the task. We hypothesize that positive interdependence leads to a higher increase in knowledge and that this effect is mediated by cognitive engagement. Results will be presented at the conference.

#### **The relationship between self-efficacy and mindfulness in the case of 10th grade hungarian students**

**Keywords:** Assessment Methods and Tools, Attitudes and Beliefs, Emotion and Affect, Self-efficacy

**Presenting Author:**Imola Budis, University of Szeged, Doctoral School of Education, Hungary

In Hungary the education is more likely knowledge-based. The students' emotional and social states and difficulties hardly diagnosed in the classroom, their results are mostly in the focus of the pedagogical evaluation. We assume that the self-efficacy and mindfulness could be in connection with each other, especially in the emotional aspect. Students could be only well aware of their competencies, could manage their effort and time effectively if they also could observe, describe, analyse their thoughts, emotions and behaviours so they can act with awareness and focus their attention to for example on solving successfully Math tasks and achieve a good test result. The Self-Efficacy Questionnaire for Children (SEQ-C) and the Five Facet Mindfulness Questionnaire's shorter version (FFMQ-24) was used in the pilot-study. In sum 82 students were measured in tenth grade with convenience sampling and we used paper-pencil version of the questionnaires. The statistical analyses were made by the SPSS program. It seems that the emotional self-efficacy is lower compared to the academic and social aspects. The emotional self-efficacy also interesting regarding the mindfulness subscales. The results indicate that the students think they are better at observing and describing, expressing their thoughts and emotions than they see their emotional self-efficacy. We see the potential that these instruments could function in a diagnostic way. The students (and also teachers) psychological factors, both the cognitive and affective aspect should take into consideration in the teaching practice.

#### **Session G 3**

20 August 2021 10:15 - 11:15

Session Room 3

Poster Presentation

Cognitive Science, Learning and Special Education, Teaching and Teacher Education

#### **Language and Reading Comprehension**

**Keywords:** Bilingual Education, Cognitive Development, Cognitive Skills, Comprehension of Text and Graphics, Cultural Diversity in School, Early Childhood Education, Emotion and Affect, Experimental Studies, Language (Foreign and Second), Language (L1/Standard Language), Mixed-method Research, Primary Education, Reading Comprehension, Second Language Acquisition, Secondary Education

**Interest group:** SIG 05 - Learning and Development in Early Childhood, SIG 21 - Learning and Teaching in Culturally Diverse Settings, SIG 27 - Online Measures of Learning Processes

**Chairperson:** saif Mohammed, University of Szeged, Doctoral School of Education, Hungary

#### **The Implementation of Cultural Learning in Austrian Lower Secondary English Classrooms**

**Keywords:** Cultural Diversity in School, Language (Foreign and Second), Mixed-method Research, Secondary Education

**Presenting Author:**Jasmin Peskoller, University of Innsbruck, Austria, Austria

classrooms. The discourse of cultural learning is situated at the interface of inter- and transcultural learning as well as global education and is informed by a postmodern, open and dynamic understanding of culture, thereby regarding learners as hybrid identities. Due to its function as a global *lingua franca*, English plays a special role in connection with cultural learning and national curricula designate the learners' development of intercultural communicative competence as its overriding goal. However, aside from research on the use of literature, authors have remarked upon a lack of empirical research on the implementation of cultural learning in foreign language education with particular shortcomings at lower secondary level. Therefore, the research project strives to provide insights into the initiation of cultural learning in Austrian lower secondary English classrooms and identify therewith-related challenges and possibilities for improvement regarding teaching materials and methodology. Thus, a mixed-methods design combining textbook analyses, teacher surveys, and classroom observations based on a generated, comprehensive criteria catalogue for cultural learning is applied. Preliminary findings suggest that the evaluated textbooks show high levels of learner-centeredness as they encourage self-reflection and show a connection to students' lives and interests; however, a lack of activities inviting learners to contrast, critically analyze or reflect on different perspectives can be detected and a threat of fossilization of stereotypes is evident in certain sections.

#### **Vocabulary and oral narrative skills in monolingual and bilingual language minority children**

**Keywords:** Bilingual Education, Language (Foreign and Second), Language (L1/Standard Language), Second Language Acquisition

**Presenting Author:**Giulia Vettori, University of Florence, Italy; **Co-Author:**Oriana Incognito, University of Florence, Italy

This study focuses on bilingual language minority children (BLM; L1-Chinese and L2-Italian) to identify the effects of the limited home exposition to the societal language (SL-Italian) on their vocabulary and oral narrative skills, considering age and sociocultural-economic status (SES). 76 primary school children (M-age = 113 months, SD = 11.8; 41 girls and 35 boys) participated in this study: 31 BLM children (L1-Chinese and L2-Italian) and 45 Italian-speaking monolingual peers. Information about age, SES and home language exposure was obtained via parental questionnaires. Children completed a vocabulary task and an oral story-

narration task evaluating children's oral textual competences (structure, cohesion, coherence), linguistic skills (word and sentence productivity), and textual processing (narrative speed). Independent t-test were conducted. Results showed significant differences between BLM and monolingual children in vocabulary skills and narrative speed. General Linear Model analyses showed that linguistic condition (BLM vs. monolingual) impacts on vocabulary skills and narrative speed, after controlling age and SES. Our results encourage involving BLM children in L2-literacy practices to strengthen their vocabulary skills, that in turn may enhance their narrative competence.

#### **Unraveling learners' cognitive and emotional processes in texts: A psychophysiological perspective**

**Keywords:** Comprehension of Text and Graphics, Emotion and Affect, Experimental Studies, Reading Comprehension

**Presenting Author:**Yilun Jheng, University of Antwerp, Belgium; **Co-Author:**Leen Catrysse, Open Universiteit Nederland, Netherlands; **Co-Author:**Karolien Poels, University of Antwerp, Belgium; **Co-Author:**David Gijbels, University of Antwerp, Belgium

Reading and learning from texts is a crucial skill in higher education and beyond. Therefore it is important to gain more insight into how we can keep readers motivated to read and process information. In persuasive communication studies, narrative texts are often used to convey information because they easily evoke emotions and as such facilitate processing of the message. However, few studies have been devoted to combining narratives in didactic texts and how this might elicit emotional responses and further learning outcomes of readers. The current study aims to unravel learners' cognitive processes and emotional engagement while they are reading narrative, didactic, and mixed text by applying physiological measurements. Specifically, we investigate emotional arousal by electrodermal activity (EDA) and emotions (ie., valence, engagement) by facial expressions, respectively. From the cognitive perspective, we employ eye-tracking to capture readers' attentional focus. To create a suitable test case for reading and learning from texts, we conducted a pretest to select the relevant topics for which readers show interest but currently lack knowledge. One hundred and fifty university students completed a survey of knowledge, perception, and interest in several health issues. Six health topics, which were classified as air pollutants and environmental hazards, were finally selected according to the criteria that participants reported low on knowledge and high on interest. Psychophysiological and eye-tracking data will be collected with university students as soon as the Covid19-regulations allow this. We presume narrative text will cause a higher rating of arousal and emotional engagement, compared with mixed and didactic text. In contrast, the mixed text will motivate readers to pay more attention and lead to a longer fixation duration, as well as a greater reading comprehension.

#### **Executive Functions empowerment during dialogic reading in preschoolers**

**Keywords:** Cognitive Development, Cognitive Skills, Early Childhood Education, Primary Education

**Presenting Author:**Costanza Ruffini, University of Florence, Italy; **Co-Author:**Silvia Spoglianti, Paroleinercchio, Centro per l'Età Evolutiva, Italy; **Co-Author:**Clara Bombonato, University of Florence, Italy; **Co-Author:**Silvia Bonetti, Equipe Multiprofessionale Evolutiva, Italy; **Co-Author:**Maria Chiara Di Lieto, Fondazione IRCCS Stella Maris, Italy; **Co-Author:**Chiara Pecini, University of Florence, Italy

Introduction Executive Functions (EF) are a family of high-level cognitive functions activated during goal directed activities that, according to fractionate models, include inhibition, updating and shifting (Moffitt, 2011). A recent ecological EF intervention has been developed by Howard & Chadwick (2015), who used the dialogic reading of an illustrated book working on EFs (Quincey Quokka's Quest, QQQ). QQQ includes 8 challenging activities of increasing difficulty on different EF. As an example, to improve updating children can be asked to maintain a sequence of visual stimuli of increasing lengths, for inhibition they may be instructed to imitate some movements but not others and for shifting they can shift between different lexical categories while naming stimuli. The present study aimed to verify the feasibility and efficacy of the Italian version of QQQ (QQQ<sub>IT</sub>) in Italian preschoolers. Method 20 typically developing children (57.6 (6.9) months) participated to the intervention, conducted by an undergraduate in Psychology, once a week for eight 20minutes-sessions. Parents completed a socio-economic questionnaire, and the BRIEF-P. Children were assessed with EF standardized tests at three time points (T0, T1, T2) and training progress were systematically recorded at each session. A repeated single sample design (baseline vs training) was used. Results QQQ<sub>IT</sub> resulted a feasible tool to be used in preschools. Performances on QQQ<sub>IT</sub> activities showed a significant trend of improvements on shifting accuracy, inhibition speed and accuracy. A significant training effect was found on the shifting test (Color and Form's Game) while on motor inhibition (Simon Says A), verbal (Keep Truck) and visuospatial (Mr Ant) working memory, significant learning effects prevailed on the training ones. Conclusion QQQ<sub>IT</sub> confirmed to be a feasible ecological, low cost and flexible approach whose efficacy was confirmed on shifting process. Nevertheless, further studies on larger samples are needed.

#### **Session G 4**

20 August 2021 10:15 - 11:15

Session Room 10

Poster Presentation

Assessment and Evaluation, Teaching and Teacher Education

#### **Assessment and Evaluation**

**Keywords:** Achievement, Assessment Methods and Tools, Bilingual Education, Cognitive Development, History, Primary Education, Reading Comprehension, Secondary Education, Self-regulation, Student Learning, Teacher Professional Development

**Interest group:** SIG 01 - Assessment and Evaluation, SIG 11 - Teaching and Teacher Education, SIG 16 - Metacognition

**Chairperson:** Rhiannon Moore, University of Bristol, United Kingdom

#### **Assessing Self-regulated Learning – Validation of a Strategy Interview for Primary School Students**

**Keywords:** Assessment Methods and Tools, Primary Education, Self-regulation, Student Learning

**Presenting Author:**Bernadette van Berk, German Institute for International Educational Research (DIPF); IDeA-Research Center, Germany; **Co-Author:**Charlotte Dignath, DIPF Leibniz Institute for Education Research Frankfurt, Germany

Distance learning during school closures due to the Covid-19 pandemic has yet again underlined the importance of self-regulation in primary school students' learning. Since there is little regulation by teachers in remote learning at home, it can be assumed that young students need to use self-regulation strategies more than ever to structure and adapt their own learning process. Researching SRL in young students is particularly challenging, as many instruments are targeted for older or university students. In addition, many authors argue for a multi-method approach to research on self-regulated learning. Although many advantages are considered in online methods, such as observational methods, these are difficult to implement both in school-based research and - under the particular challenges of the pandemic - in online research. Accordingly, further research is needed on the assessment of SRL, especially in young children. The current study aims to test the validity of a strategy interview to assess SRL in primary school students. For this purpose, we adapted the Self-Regulated Learning Interview Schedule SRLIS (German version: (Spörer, 2003); original version: (Zimmerman & Martinez-Pons, 1986), which was originally developed for secondary school students, to the context of primary school students (2<sup>nd</sup> to 4<sup>th</sup> grade). The interview was designed to comprehensively assess primary school student's use of SRL strategies based on four different learning scenarios (1. homework, 2. reading, 3. low motivation, 4. concentration difficulties). The interview will be tested regarding reliability, internal validity, and construct validity using convergent and discriminant relationships between the interview and established instruments (latent correlations). Results will be presented at the conference.

#### **Measuring knowledge of historical reasoning and how to teach it in an elementary school PD-programme**

**Keywords:** Assessment Methods and Tools, History, Primary Education, Teacher Professional Development

**Presenting Author:**Yolande Potjer, University of Amsterdam, Netherlands; **Co-Author:**Marjolein Dobber, Vrije Universiteit Amsterdam, Netherlands; **Co-Author:**Carla Van Boxtel, University of Amsterdam, Netherlands

History education researchers emphasize the importance of historical reasoning activities in teaching and learning history (Levstik & Barton, 2015; Levstik & Thornton, 2018; Van Boxtel et al., 2020). Students learn to see history as relevant for their own lives and the developed historical skills as applicable to contemporary problems (Levstik & Barton, 2015). Historical reasoning is not part of the current elementary school history curriculum in the Netherlands. We

developed a two-year professional development programme to prepare grade 3-6 teachers to develop and teach historical reasoning lessons. Teacher professional development is considered to be an essential ingredient in creating and maintaining high quality education (Clarke & Hollingsworth, 2002). To measure the effectiveness of our programme we developed a series of three paper-based knowledge-skills tests that will measure increasing historical reasoning skills and growth in participants' ability to design historical questions or learning activities to engage students in historical reasoning. We developed and piloted a test to measure teachers' knowledge of historical reasoning and of inquiry-based learning activities. The test contained 21 questions, with 12 multiple-choice questions and 9 short-answer questions. Analysis of the results of the pilot show that  $p(\text{average})$  is 0,56. This is within the norm for a combined open and three-option mc-test. Questions which discriminated insufficiently were adapted or removed. Subsequently, experts in the construction of national history tests were asked to evaluate the validity of the ensuing instrument. The labels attached to the questions were checked to increase validity. The adapted pretest consists of 30 questions: 12 mc-questions and 18 short-answer questions. Due to the adaptations (more items and more items that question the same subconstruct) reliability of the test increased from 0,48 to 0,66. Twenty teachers participated in the pretest. Mean score was 29,7, standard deviation 5,0 and  $p(\text{average})$  was 0,67.

#### **MEDIATION OF ENGAGEMENT BETWEEN CLASSROOM CLIMATE AND STUDENTS' OUTCOMES IN KAZAKHSTAN**

**Keywords:** Assessment Methods and Tools, Bilingual Education, Reading Comprehension, Secondary Education

**Presenting Author:** Aigul Akhmetova, University of Szeged, Doctoral School of Education, Hungary; **Co-Author:** Gaysha Imambayeva, Innovative Eurasian University, Kazakhstan; **Co-Author:** Benő Csapó, University of Szeged, Hungary

This study examines mediation effect of engagement between classroom climate and reading achievement in three languages among sixth- and eighth-grade students in Kazakhstan. Participants ( $n=1563$ ) were randomly chosen from seven secondary schools of Pavlodar (northern Kazakhstan). Their native languages were Kazakh or Russian, reading tests in English, Kazakh and Russian as well as a questionnaire regarding engagement and classroom climate were administered via the eDia online assessment platform. Results indicated that sixth graders showed full mediation effect in Kazakh and Russian and no mediation in English, and eighth graders demonstrated full mediation in English, and partial in Kazakh and Russian languages. Direct effect of X (IV) on M (DV) was significant in both grades, although mediation was non-significant in English tests in Grade 6, albeit was significant in Grade 8. R-square defined significant influence of latent factors on the tests in both grades. Particularly in Grade 6 the impact was not strong almost (1%) of each in English and Kazakh languages, but slightly better in Russian (15%). Comparing to Grade 8, the effect was better in Kazakh and Russian (10% and 15%), but weak in English (1%). Hence, the mediation effect is taken place among young learners in Kazakhstan although further research in this field is called for.

#### **Students' track recommendation, and performance development in primary and secondary education.**

**Keywords:** Achievement, Cognitive Development, Primary Education, Secondary Education

**Presenting Author:** Anne van Leest, Utrecht University, Netherlands; **Co-Author:** Lisette Hornstra, Utrecht University, Netherlands; **Co-Author:** Jan van Tartwijk, Utrecht University, Netherlands; **Co-Author:** Janneke van de Pol, Utrecht University, Netherlands

Background. Performance development may be important when formulating track recommendations, because it may predict how, and at what rate, students develop their performance in the future. Additionally, there may be differences in developmental performance trajectories related to students' background characteristics, as socio-economic status (SES) and gender. If performance development is taken into account by teachers when formulating track recommendations, a student showing little progress may receive a lower track recommendation than a student who showed more development even if their most recent performance levels are similar. Aims. The aim of this study was to examine to what extent performance development is taken into account by teachers when formulating track recommendations, to what extent performance development is predictive of students' performance in secondary education, and whether there are differences based on students' gender and SES. Sample. The sample consisted of 4,356 students. Methods. Existing datasets were used. Data were analysed using two-level multilevel latent growth modelling. Results. On top of students' most recent performance, their development in primary education was significantly related to their track recommendations. Students' performance in primary school also predicted their performance in secondary school. Overall, lower-SES students received lower track recommendations than higher SES-students with the same recent performance level, however, lower-SES students showed more development. Conclusion. The results indicated students' development over years in primary education is taken into account when formulating track recommendations, but students' most recent performance seemed of more importance.

#### **Session G 5**

20 August 2021 10:15 - 11:15

Session Room 7

Poster Presentation

Teaching and Teacher Education

#### **Attitudes and Beliefs in Teacher Professional Development**

**Keywords:** Attitudes and Beliefs, Educational Psychology, In-service Teacher Education, Mixed-method Research, Quantitative Methods, Science Education, Self-efficacy, Teacher Professional Development

**Interest group:** SIG 11 - Teaching and Teacher Education

**Chairperson:** Mengsi Liu, The University of Tokyo, Japan

#### **Mentoring Novice Teachers: Effects on Self-Efficacy, Emotion Work, and the Role of Mentees' Beliefs**

**Keywords:** Attitudes and Beliefs, In-service Teacher Education, Self-efficacy, Teacher Professional Development

**Presenting Author:** Julian Burger, Johannes Gutenberg-Universität, Germany

School-based mentoring is an integral part of many international teacher induction curricula and has displayed beneficial effects on mentees' skill acquisition, well-being, and retention. However, effective mentoring depends upon multiple factors on the mentor's and the novice's side likewise. While recent studies underline the advantages of a constructivist-oriented mentoring style over traditional approaches, little is known about the consequences of a match versus mismatch of the teacher educator's approach and the mentee's initial beliefs about teaching and learning. Moreover, the influence of this mentoring style on beginning teachers' emotion work is yet to be determined. This study provides new insight into the effects of constructivist-oriented mentoring on novice teachers' self-efficacy and emotional surface acting, considering the mentees' constructivist and transmissive beliefs about teaching as moderators of mentoring effectiveness. 138 beginning teachers were surveyed twice, upon entrance into the second and third trimester of their post-university practical training phase in Germany. Moderated regression analyses reveal beneficial effects of constructivist-oriented mentoring on teacher self-efficacy and surface acting frequency when mentees' transmissive beliefs were moderate and high, respectively. With respect to constructivist beliefs, no moderation of the longitudinal first-order effects was found. Future directions and implications for mentoring practice are discussed.

#### **Verification of a Standardized Instrument Recording Profession-Specific Competencies of Mentors**

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

**Presenting Author:** Bettina Gautel, Gottfried Wilhelm Leibniz Universität Hannover, Germany; **Co-Author:** Katharina Mueller, Leibniz University Hannover, Germany

Current research on teacher training has increasingly focused on the importance of professional instruction for teacher students during their internships in school. Since experienced teachers (mentors) at school usually support the preservice teachers (mentees), the question of how mentors can promote the learning process and the professionalization of the mentees within their internship has become the focus of various studies. Hence, empirical research on various mentoring-programs is not only constantly increasing but also uses a wide range of methodical approaches. Nevertheless, standardized and reliable instruments to investigate mentors' competencies, attitudes and understanding of their role are rare. Therefore, the aim of the present study was to examine a standardized questionnaire, which records profession-specific competencies and attitudes of mentors via self-assessment, with regard to its reliability. For that reason  $N = 104$  mentors were asked to fill in the standardized questionnaire. They were asked about their perception of an ideal mentor as well as different

facets of conducting consultations. The reliability analysis was divided into three steps: the item analysis, the exploratory and the confirmatory factor analysis. The results of the reliability analysis will be presented and potentials for improvement shall be discussed.

#### **Teachers' epistemic cognition and work-related wellbeing**

**Keywords:** Attitudes and Beliefs, Educational Psychology, Mixed-method Research, Teacher Professional Development

**Presenting Author:** Iida Vedenpää, University of Helsinki, Finland

**TEACHERS' EPISTEMIC COGNITION AND WORK-RELATED WELLBEING** Abstract Epistemic cognition is an important research topic in understanding the challenges teachers meet in their profession in the 21st Century. Epistemic cognition refers to conceptions of knowledge and learning as well as their practical application. In previous studies, two epistemic theories have been confirmed: reflective-collaborative theory and knowledge transmission theory. In Finland, teachers' working conditions have become increasingly challenging and almost 50% of Finnish teachers are at risk of burnout. Teachers' wellbeing is associated with students' wellbeing and it is important to investigate the elements that affect to teachers' work-related wellbeing. In this study, a mixed method approach was adopted to research teachers' epistemic theories and work-related wellbeing. The participants (200 in-service teachers from 6 schools in metropolitan Helsinki area) completed online self-report questionnaires consisting of Likert-type statements on epistemic beliefs and open-ended questions on their job-related demands and resources. A person-oriented, cluster-analytical approach was used to investigate the associations between various dimensions of the epistemic theories and to examine teachers' epistemic profiles. Three profiles were found. Reflective-collaborative profile, dissonant profile, and knowledge-transmission profile. The answers of the open-ended questions were coded in different categories based on Job Demands-Resources model. The most common demands teachers experienced were the lack of job control, pupils, workload, and collaboration. The most common resources were pupils, learning of the pupils, and collaboration. It is of interest to see, how epistemic profiles are related to teachers' wellbeing.

**Keywords:** Epistemic cognition, Epistemic beliefs, Epistemic profiles, Teachers' wellbeing, Cluster analysis, Mixed methods,

#### **Physics Teachers' Beliefs of Students' Interest and Talent - A qualitative Study**

**Keywords:** Attitudes and Beliefs, Mixed-method Research, Science Education, Teacher Professional Development

**Presenting Author:** Verena Auer, University of Salzburg, Austria

Findings reveal that girls are less interested in physics lessons than boys (e.g., Häußler et al., 1998; Herbst et al., 2016). One possible reason for the persistent lack of girls' interest is assumed in the design of the physics lessons and in the professional teaching behaviour. It is suspected that teachers might believe that girls are generally less interested and talented in physics, which can result in reinforcing gender stereotypes in the classroom. To promote gender equality in education, gender stereotypes need to be eradicated in the educational system (e.g. Council of Europe, 2018). Thus, physics teachers need to be gender competent. Professional gender competence includes for instance knowing how to address both genders equally and reflecting on one's teaching behaviour. In the COACTIV model of teachers' professional competence by Baumert and Kunter (2013) the facets

of gender competence could be integrated into the aspects *professional knowledge* and in *beliefs/values*. This qualitative study examined which beliefs physics teachers hold regarding gender-specific aptitude for physics. Semi-structured interviews with Austrian physics teachers (n= 25) were conducted in low and high track secondary schools. The results are the basis for further research in a mixed-methods design that aims to examine how gender competent physics teachers are.

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## **Session G 6**

20 August 2021 10:15 - 11:15

Session Room 9

Poster Presentation

Instructional Design, Learning and Social Interaction, Teaching and Teacher Education

### **Metacognition and Social Interaction**

**Keywords:** Collaborative Learning, Experimental Studies, Instructional Design, Lifelong Learning, Metacognition, Professions and Applied Sciences, Quantitative Methods, Self-regulation, Social Interaction, Student Learning, Teaching/Instruction, Video Analysis, Workplace Learning

**Interest group:** SIG 14 - Learning and Professional Development, SIG 16 - Metacognition

**Chairperson:** Julia Kantreiter, University of Augsburg, Germany

#### **Do Rubrics Enhance Self-Assessment Accuracy?**

**Keywords:** Experimental Studies, Instructional Design, Metacognition, Quantitative Methods

**Presenting Author:** Rebecca Krebs, Ruhr-University Bochum, Germany; **Co-Author:** Julian Roelle, Ruhr University Bochum, Germany; **Co-Author:** Björn Rothstein, Ruhr-University Bochum, Germany

Being able to judge one's own task performance is crucial in self-regulated learning. Learners who can detect suboptimalities and shortcomings in their task performance can take beneficial regulation decisions and thus enhance their task performance and learning outcomes. A promising tool for promoting this accuracy are rubrics. Rubrics provide specific criteria and describe levels of quality for an assignment. However, although the benefits of rubrics are frequently attributed to the fact that they support learners in forming diagnostic cues for accurately judging their performance, experimental studies that have explicitly test this hypothesis are rare. Therefore, in the present study, we tested this potential explanation of the benefits of rubrics. For this purpose,  $N = 93$  high school students were asked to write a scientific text and form judgments of performance afterwards. All learners were told to base their self-assessments on provided criteria. While learners made their assessments, we varied whether they received a rubric that specified the levels of quality (*with-rubric-condition*) or received no such rubric (*without-rubric-condition*). Results showed that self-assessments of the learners in the *with-rubric-condition* were significantly more accurate than those of their counterparts. The mental effort invested in forming the self-assessments did not differ between conditions, but the perceived difficulty of forming assessments was significantly lower in the *with-rubric-condition*. We conclude that rubrics can increase the accuracy and decrease the difficulty of forming self-assessments of task performance because they support learners in forming diagnostic cues for making the self-assessments.

#### **How is Teachers' Professional Competence Linked to Their Promotion of Self-Regulated Learning?**

**Keywords:** Metacognition, Self-regulation, Student Learning, Teaching/Instruction

**Presenting Author:** Antonia Fischer, German Institute for International Educational Research (DIPF), Germany; **Co-Author:** Charlotte Dignath, DIPF Leibniz Institute for Education Research Frankfurt, Germany

Self-regulated learning has a positive impact on various outcomes, such as motivation and academic achievement. In times of distance learning due to Covid-19, the ability to self-regulate one's learning and its associated positive outcomes seem to be more crucial than ever. Research has shown that even young school children can profit from SRL trainings. However, trainings conducted by researchers have proven to be more effective than those conducted by teachers. This study aims to examine which aspects of professional teacher competence, such as knowledge, beliefs, or self-efficacy, are linked to teachers' promotion of SRL in the classroom and may cause differences in the promotion of SRL. Participants are 1st to 8th grade teachers from all school types in Germany. The participants will take part in an online survey, and a subsample will be interviewed following a standardised interview manual. The data will be analysed via structural equation modelling. The results of the study will shed light on possibilities to improve teacher education and, therefore, have a direct impact on the

application of educational research within the classroom. The data has been collected and will be analysed at the time of abstract submission. Results and discussion will be added after data analysis.

#### **Patterns of Socio-emotional and Cognitive Participation for Regulation in Collaborative Learning**

**Keywords:** Collaborative Learning, Self-regulation, Social Interaction, Video Analysis

**Presenting Author:**Eija Vuorenmaa, University of Oulu, Finland, Finland; **Co-Author:**Sanna Järvelä, University of Oulu, Finland; **Co-Author:**Muhterem Dindar, University of Oulu, Finland; **Co-Author:**Hanna Jarvenoja, University of Oulu, Finland

Co-regulated learning and socially shared regulation of learning allow the management of learning processes on a group-level in collaborative learning settings. To conduct these group-level regulatory activities, learners need to engage in social interaction with each other. Previous research suggests that regulation in social interaction may be in connection to the level of participation. However, there is no substantial research on how participation in interaction is related to regulation in collaborative learning settings, and further, how these interaction patterns unfold in collaborative learning. This study aims to investigate patterns of participation in socio-emotional and cognitive interaction and how they are intertwined with group-level regulation in collaborative learning. The participants of this study were secondary school students (N = 94), who worked in collaborative science lessons in groups of three to four students including one dyad, resulting 30 groups in total. The groups were videotaped for five 90 minutes sessions during a physics course by using Insta360 Pro 360-degree cameras. The data analysis consisted of video data analysis, descriptive statistics, and time series visualizations. The results support the evidence that regulation contributes to collaborative learning and highlight the role of participation in interaction for group-level regulation.

#### **Social Network Perspective on Knowledge Sharing: A Systematic Review**

**Keywords:** Lifelong Learning, Professions and Applied Sciences, Social Interaction, Workplace Learning

**Presenting Author:**Sofie Vermeiren, University Antwerp, Belgium; **Co-Author:**Eva Kyndt, University of Antwerp, Belgium; **Co-Author:**David Gijbels, University of Antwerp, Belgium

Despite the growing interest in social networks and knowledge sharing and the recognition that social networks are important in determining knowledge practices, a to date scattered research field leaves us with a lack of clarity regarding the relation between social networks and the process of knowledge sharing within organisations. Therefore, this study aims to review and synthesize the studies that have examined the process of knowledge sharing from a social network perspective. More specific, the study aims to explore how different dimensions of social networks (e.g., structural, relational and cognitive) relate to the process of knowledge sharing within organisations. The structural dimension refers the overall pattern and configuration of connections between actors (e.g., employees, teams). The relational dimension refers to the nature of connection between actors in a social context and to the assets rooted in a relationship. The cognitive dimension refers to the resources within relationships that provide shared representations (e.g., common knowledge, congruent understanding, shared goals). Five databases were searched for this study: Eric, PsycINFO, Business source complete, Econlit and Social Science Citation Index. The search terms were "knowledge distribution", "Knowledge exchange", "knowledge management", "Knowledge sharing" and "knowledge transfer" in combination with "social network". The PRISMA flow diagram was followed for selecting literature and only articles which met the predefined criteria were included in the study. Preliminary findings indicate that all three dimensions of social networks play a key role in the process of knowledge sharing within organisations. However, most studies focus on the relation between social networks and knowledge sharing at the individual level. Only a few studies explore this relation at the team and organizational level. To conclude, the network perspective on knowledge sharing is promising but still far from being a mature field, with a lot of opportunities for theorizing as well as empirical testing.

#### **Session H 1**

20 August 2021 11:30 - 12:30

Session Room 3

Single Paper

Higher Education, Motivational, Social and Affective Processes

#### **Higher Education**

**Keywords:** Content Analysis, Educational Psychology, Higher Education, Motivation, Peer Interaction, Qualitative Methods, Quantitative Methods, Self-efficacy, Social Sciences

**Interest group:** SIG 04 - Higher Education

**Chairperson:** Winnie-Karen Giera, Germany

#### **University students' remote learning experiences, motivation and well-being during Covid-19 pandemic**

**Keywords:** Educational Psychology, Higher Education, Motivation, Self-efficacy

**Presenting Author:**Henriikka Juntunen, University of Helsinki, Finland; **Co-Author:**Heta Tuominen, University of Turku, Finland; **Co-Author:**Jaana Viljaranta, University of Eastern Finland, Finland; **Co-Author:**Riikka Hirvonen, University of Eastern Finland, Finland; **Co-Author:**Auli Toom, University of Helsinki, Finland; **Co-Author:**Markku Niemivirta, University of Eastern Finland, Finland

The COVID-19 pandemic forced educational institutions to rapidly shift to remote learning, drastically affecting students' studying and interaction with their peers and the academic community. Although direct evidence is still lacking, we might expect these experiences to be linked with students' motivation, and to contribute to their well-being. In this study, we investigated i) how Finnish university students evaluate the changeover to remote learning and how they experience new practices, ii) how these experiences predict well-being, and iii) whether the predictions vary depending on students' motivation. Students (N = 2686) from three universities completed a questionnaire addressing their remote learning experiences (remote teaching, perceived strain, and loneliness), motivation (expectancy, intrinsic, attainment, utility, and cost), and psychological well-being (engagement, exhaustion, and depressive symptoms). Within the latent variable modeling framework, we classified students according to their expectancy-value profiles, compared latent means, and tested whether the predictions differed across the groups. Six groups described the data best: moderately motivated (24,5%), utility-oriented (21,8%), disengaged (15,7%), indifferent (15,4%), positively ambitious (13,3%), and struggling ambitious (9,3%). The groups differed significantly on both remote learning experiences and well-being. Positively ambitious students reported most positive experiences and disengaged most negative. However, the predictions were identical across the groups, thus suggesting similar processes within the profiles: Engagement was predicted positively by positive evaluation of remote teaching and negatively by perceived strain, exhaustion by perceived strain, and depressive symptoms by perceived strain and loneliness. Findings suggest that students' remote learning experiences during the pandemic contribute to their well-being in distinct ways, and that certain motivational mind-sets might buffer against the negative effects. Highlighting the role increased burden and isolation play in students' experiences, our study offers insights into what to consider when planning remote teaching practices and how to support students in such unprecedented situations.

#### **Emotional support and the effects on well-being in teacher training: A longitudinal approach**

**Keywords:** Higher Education, Peer Interaction, Quantitative Methods, Social Sciences

**Presenting Author:**Anna Hartl, Technical University Munich, Germany; **Co-Author:**Doris Holzberger, Technical University of Munich (TUM), Germany; **Co-Author:**Kristin Wolf, German Institute for International Educational Research (DIPF), Germany

Burnout in the teaching profession is well known, and findings indicate that the consequences are far-reaching for both the individual teacher and for student outcomes. Long-term stressors that can occur at university lead to burnout already in this early phase of teacher training. Previous research showed a relationship between social support and well-being, but there is a shortage of studies dealing with the longitudinal change of the variables. This study goes a step further and examined, based on bivariate latent change score models, how changes can be predicted. The focus was to investigate the interplay between emotional exhaustion and emotional support, using the database of a student survey from German universities with 1080 student teachers. First longitudinal results indicated that emotional exhaustion, as well as emotional support, increased with the progress of the students' study. Furthermore, the bivariate latent change model showed the less emotionally exhausted the student teacher is, the more is the emotional supported and vice versa. The final results, available by

the time of the conference, contribute to the design of teacher training as well as direction for further research and recommendations for teacher training.

### **Caught Between Relief and Unease. University Students' Well-being and Resilience During COVID-19**

**Keywords:** Content Analysis, Educational Psychology, Higher Education, Qualitative Methods

**Presenting Author:** Lisa Kiltz, University of Groningen, Netherlands; **Co-Author:** Marjon Fokkens-Bruinsma, University of Groningen, Netherlands; **Co-Author:** Ellen Jansen, University of Groningen, Netherlands

Next to a wealth of literature on compromised student well-being already pre-COVID-19-times, university students have been found to be particularly vulnerable for psychological ill-being during a pandemic. Whereas various stressors ranging from uncertainty to disruption of one's social life may impact well-being considerably, resilience could constitute a psychological resource for individuals to face the current crisis. Systemically seen, students' learning environment plays a substantial role in promoting their well-being by satisfying their basic psychological needs of autonomy, competence, and relatedness. In the current study, we conducted a longitudinal interview study from before to during the COVID-19 pandemic. The interviewees, consisting of university students, teachers, a study advisor, and a student psychologist, commented on three aspects: first, how student well-being evolved, second, how the learning environment impacted that, and third, which resilience factors may have contributed to it. Thematic coding, with both deductive and inductive codes, led to the following results: First, the pre-postulated stressors could be found within the interviews as well. However, also positive consequences emerged for student well-being, including resilience growth. Secondly, we found consequences for teaching such as an impacted sense of autonomy, competence, and relatedness in particular. Furthermore, the interviewees reported consequences for learning as well, such as detaching from one's studies, but also challenges and opportunities as well as positive outcomes for one's studies. Lastly, the participants reported a wealth of resilience factors, including factors within the individual such as social and individual resources. Additionally, they also described factors within academia such as an impaired student-teacher relationship and their sense of belonging. These findings connecting the learning environment to student well-being and resilience may further help to reshape the future academic system, which we will have to rebuild after the COVID-19 pandemic will have ceased.

### **Session H 2**

20 August 2021 11:30 - 12:30

Session Room 9

Single Paper

Learning and Instructional Technology, Learning and Social Interaction

### **Collaborative Learning**

**Keywords:** Collaborative Learning, Computer-supported Collaborative Learning, Educational Technology, Learning Technologies, Metacognition, Problem Solving, Self-efficacy, Self-regulation, Video Analysis

**Interest group:** SIG 07 - Technology-Enhanced Learning And Instruction, SIG 08 - Motivation and Emotion, SIG 16 - Metacognition

**Chairperson:** Sarah Straub, Austria

### **Linking higher education students' self-efficacy beliefs and participation in group level regulation**

**Keywords:** Collaborative Learning, Self-efficacy, Self-regulation, Video Analysis

**Presenting Author:** Sara Ahola, University of Oulu, Finland, Finland; **Co-Author:** Jonna Malmberg, University of Oulu, Finland; **Co-Author:** Hanna Jarvenoja, University of Oulu, Finland

Previous studies have shown that self-efficacy influences individuals' motivation and academic performance. Studies also suggest that self-efficacy does not remain static but varies depending on contextual factors related to the task at hand and prior performance. These situational self-efficacy beliefs further influence how students engage in self-regulating their learning. However, not enough is yet known about how these beliefs might play a role in group level regulation processes during collaborative learning. The aim of this study is to first explore higher education students' situational self-efficacy beliefs in relation to task performance and then to investigate how situational self-efficacy beliefs relate to students' participation in the regulatory activities taking place between group members during a collaborative task. The study involved 18 university students working on a computer-based collaborative task in six small groups. Repeated self-reports measuring group members' self-efficacy were collected and related to performance feedback from the task as well as participation in group level regulation identified from videotaped collaborative working. The results showed that the mean value of reported self-efficacy differed significantly according to the nature of recent feedback. The results also showed that how students participated in regulation was connected to their level of self-efficacy; significant associations were found between low self-efficacy and taking a passive role in group level regulation as well as between high self-efficacy and taking an active role. These findings are in line with those of previous studies suggesting that self-efficacy is sensitive to situational factors related to the task at hand, such as immediate success or failure feedback. This study further suggests that situational self-efficacy beliefs are associated with the participation roles students take during group level regulation.

### **How multiple levels of metacognitive awareness operates in collaborative problem solving**

**Keywords:** Collaborative Learning, Metacognition, Problem Solving, Video Analysis

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

Metacognitive awareness is knowing about learners' thinking and learning developed by introspection and self-evaluation. Although metacognition is personal, it cannot be explained just by individual conceptions, especially in collaborative group context. This study considers metacognitive awareness on multiple levels and investigates how sources that trigger metacognitive awareness at an individual, social and environmental levels are associated with group task performance and emotions via facial expressions. Seventy-seven higher education students collaborated in triads on a computer-based simulation about running a fictional company for twelve simulated months. The individual level of metacognitive awareness was measured with Metacognitive Awareness Inventory (MAI), social level of metacognitive awareness was measured through situated self-report questionnaires applied during the collaboration (i.e. metacognitive judgements and task difficulty) and the complex problem solving (CPS) task that encouraging learners to develop metacognitive thinking through different types of problem-solving tasks. Group members' interactions during collaboration were further video recorded. Perceived individual and group performance were measured with self-reports at the end of the CPS task. A structural equation modelling (SEM) was conducted to observe the relationships between the multiple levels of metacognitive awareness, and group performance. A direct relationship was found between metacognitive judgments and perceived individual performance. Based on video data, students' facial expressions were further analysed to explore the relationship between the multiple levels of metacognitive awareness and emotions. The current study contributes to the literature by displaying relatively static and dynamic aspects of metacognition in CPS.

### **Collective artifacts in co-construction process: Moving from "I" to "We"**

**Keywords:** Collaborative Learning, Computer-supported Collaborative Learning, Educational Technology, Learning Technologies

**Presenting Author:** Niina Halonen, University of Helsinki, Finland

In system theories, chaos is a chance for the new beginning, whereas in educational practices it is often regarded as something to avoid. We integrated theories of collaborative object-oriented learning and system theories of self-organizing processes. The aim of this article is to analyze 1) characteristics of a small-group co-construction process and 2) self-organization of the small group aided by novel speech recognition technology in the context of science teacher education. We present a case study, where eight student teachers (in two small groups) used speech recognition technology in their collaborative learning tasks during physics lessons. Overall methodological orientation was design-based research. The pedagogical design followed the phases: 1) Activation by discussion 2) Object-oriented editing, and 3) Presentation and evaluation. Data included videos, screen-capture videos and audio recordings. The small group sessions were videotaped and transcribed. A thematic analysis was conducted and then complemented by a content analysis, in which the participants' reactions to the speech recognition technology were analyzed, identifying elements of co-construction and systemic self-organization of the small groups. Student participation was measured as the frequency of contributions. Results showed that when novel speech recognition technology externalized and

materialized the recorded learning discussion into the form of word clouds, discussion turns of every participant increased during the object-oriented editing. Actions on the shared artifacts (word clouds) included collaborative elements; questions, answers, comments, etc. It appeared that the technology supported groups' self-organization processes from increased entropy towards new order via a chaos zone. During the process, one group achieved the bifurcation moment, where new knowledge was built truly collaboratively. The group identity appeared to strengthen from individual view to support collective atmosphere after the phase of object-oriented editing.

### Session H 3

20 August 2021 11:30 - 12:30

Session Room 8

Single Paper

Teaching and Teacher Education

#### Teacher Professional Development

**Keywords:** Educational Psychology, In-service Teacher Education, Motivation and Emotion, Quantitative Methods, Social Interaction, Teacher Professional Development, Teaching/Instruction

**Interest group:** SIG 11 - Teaching and Teacher Education

**Chairperson:** Xiangyuan Feng, University of Groningen, Netherlands

#### The Significance of Teacher Enthusiasm and Teacher Interest for the Quality of Lesson Planning

**Keywords:** Motivation and Emotion, Quantitative Methods, Teacher Professional Development, Teaching/Instruction

**Presenting Author:** Julia Kantreiter, University of Augsburg, Germany

There is empirical evidence that the quality of lesson planning is one important predictor for the quality of instruction. Depending on how strong they value them, teachers implement different features of instructional quality in their classes. Instructional quality is positively influenced by intrinsic motivational orientations (i.e., teacher enthusiasm and teacher interest), which contains a subject dimension and a teaching dimension. Both dimensions have different effects on the instructional quality, but it remains to be seen if this is also applicable for the quality of lesson planning. Therefore, this study investigated the associations between teacher enthusiasm and teacher interest with the value, teachers attribute to different features of the quality of lesson planning. Questionnaires were answered by N = 464 primary school teachers in order to figure out the differences between the subject dimension and the teaching dimension of intrinsic motivational orientations. Confirmatory factor analyses suggested that both the subject dimension and the teaching dimension of the intrinsic motivational orientations are distinguishable. Structural equation modelling implied that the subject dimension of the intrinsic motivational orientations is associated with subject-oriented features of the quality of lesson planning, while the teaching-oriented features were related to the teaching dimension of the intrinsic motivational orientations. *Keywords:* motivation and emotion, quantitative methods, teacher professional development, teaching/instruction

#### Developing teachers' social and emotional learning - are workshops useful?

**Keywords:** Educational Psychology, In-service Teacher Education, Social Interaction, Teacher Professional Development

**Presenting Author:** Minna Berg, University of Helsinki, Finland; **Co-Author:** Markus Talvio, University of Helsinki, Finland; **Co-Author:** Taru Lintunen, University of Jyväskylä, Finland; **Co-Author:** Kirsti Lonka, University of Helsinki, Finland

The current Finnish national curriculum (2016) emphasizes teachers facilitating their pupils' social and emotional learning (SEL). This also requires teachers to develop their own SEL competence. The present study qualitatively evaluates the SEL knowledge of teachers and their readiness to apply it after participating in widely used international workshops, named Lions Quest (LQ). The development of teachers' SEL knowledge and their readiness to apply it regarding the LQ topics were measured. The training lasted two days in a row and 8 hours per day. The participants in this intervention were 152 Finnish teachers and their comparison group were 61 Finnish teachers who did not attend the workshops. We investigated the qualitative changes in teachers' answers. We used paper cases concerning the use of SEL skills defined by Lions Quest. Based on the answers to these cases, categories were created to capture the contents before and after LQ. The established categories were classified into those that were in line with the original goals of LQ and into categories that were not desirable but rather, indicated roadblocks that would prevent constructive interaction. After the training, the participants were more knowledgeable and more capable of applying their knowledge in pedagogical contexts. However, the results also indicated some typical roadblocks being easier to change, while others were more resistant to change. Among the comparison group, no significant differences between the pre- and the post-test were found. This study adds to both theoretical and practical development of continuing teacher training.

### Session H 4

20 August 2021 11:30 - 12:30

Session Room 10

Single Paper

Instructional Design, Teaching and Teacher Education

#### Metacognition and Self-Regulation

**Keywords:** Experimental Studies, In-service Teacher Education, Instructional Design, Metacognition, Primary Education, Self-regulation, Teacher Professional Development

**Interest group:** SIG 16 - Metacognition

**Chairperson:** Amine Merve Ercan, Middle East Technical University, Turkey

#### In-class Implementation of Self-Regulated Learning practices following Unique Authentic Experiences

**Keywords:** In-service Teacher Education, Metacognition, Self-regulation, Teacher Professional Development

**Presenting Author:** Orna Heaysman, School of Education, Bar-Ilan University, Israel; **Co-Author:** Bracha Kramarski, Bar-Ilan University, Israel

Abstract Self-regulated learning (SRL) is a cyclic process of forethought, performance, and evaluation, aimed towards the learning goals, and promotes independence in learning. Supporting SRL is challenging for teachers who lack the knowledge, skills, or self-efficacy to teach it. This study offers an intervention program aimed to bridge SRL theory and practice with unique authentic experiences – simulations with professional actors and video analysis, accompanied by real-time evaluation. We aimed to examine the intervention's effectiveness comparing experimental and control groups, by investigating in-class SRL implementation through two practices: *knowledge construction* pedagogy emphasizing autonomous learning and collaboration, and *metacognitive strategies* to support the learners towards their goal, like self-questioning prompts, goal-setting, monitoring, and reflection. Method. In a quasi-experimental study, participants included 76 teachers in two groups: *experimental*, which received SRL support with authentic simulations and video experiences; and *control*, which participated in a general effective teaching program. The groups were pre/post assessed with lesson video-analysis, evaluating practices' *explicitness* (clarity and expression), and measuring its' *duration* in the lesson of the two SRL practices. Findings. Two-way repeated-measures ANOVAs revealed highly significant interactions of group and time in explicitness and duration of SRL practices, indicating higher increases for the experimental group. Differences between the two practices in explicitness and duration were revealed among the experimental group. While most SRL interventions focused on either theory or practice, this study addresses both needs of teachers: theoretical and practical, using simulations and video as unique authentic experiences to achieve SRL practice change. The study has implications for teacher education programs. *Keywords* (4): Self-regulated learning, metacognitive strategies, simulations, real-time measurement.

#### Primary School Students' Awareness of their Monitoring and Regulation Accuracy

**Keywords:** Experimental Studies, Metacognition, Primary Education, Self-regulation

**Presenting Author:**Sophie Oudman, Utrecht University, Netherlands; **Co-Author:**Janneke van de Pol, Utrecht University, Netherlands; **Co-Author:**Tamara Van Gog, Utrecht University, Netherlands

Accurate self-monitoring and self-regulation are critical for effective self-regulated learning. Research has shown that primary school students engaged in problem solving often make inaccurate self-monitoring and self-regulation judgments. Therefore, it is imperative to look for ways to help students to improve these judgments. One promising approach is to investigate students' *awareness* of their monitoring and regulation (in)accuracy, as this could be helpful in promoting students' self-monitoring and self-regulation. Students show awareness of their monitoring or regulation accuracy when they feel relatively more confident about more accurate judgments than about less accurate judgments and vice versa. Thus far, such awareness has only been investigated in adolescents and adults. We investigated whether primary school students show signs of awareness of their monitoring and regulation accuracy during math problem solving. Moreover, we investigated how self-scoring their answers affected students' awareness of their regulation accuracy and whether low- and high-performing students differed in their accuracy awareness. Fourth-grade students made monitoring and regulation judgments on math problem tasks and rated their confidence in those judgments (i.e., second-order judgments). Our findings suggest that students had limited awareness of their monitoring and regulation accuracy before self-scoring. However, after self-scoring, (1) students who were inaccurate before, but made accurate regulation judgments after self-scoring seemed aware of their accuracy (because they felt more confident), (2) students who still made inaccurate regulation judgments seemed aware of their inaccuracy (because their confidence increased less than the former group), or (3) both 1 and 2 applied. We found no systematic differences in awareness of monitoring and regulation accuracy between low- and high-performing students, before and after self-scoring.

#### **How to improve learners' accuracy in judging self-generated examples**

**Keywords:** Experimental Studies, Instructional Design, Metacognition, Self-regulation

**Presenting Author:**Linda Froese, Ruhr University Bochum, Germany; **Co-Author:**Julian Roelle, Ruhr University Bochum, Germany

Generating examples can be an effective elaborative learning strategy for comprehending and applying conceptual knowledge. Unfortunately, students' judgment accuracy when evaluating self-generated examples is often poor. This is problematic as the quality of applied generative learning techniques is essential for beneficial learning outcomes. To investigate how students can improve their judgment accuracy when evaluating self-generated examples, we conducted an experiment where students were asked to generate examples to previously learned declarative concepts before evaluating the quality of their generated examples. For the process of example evaluation, students were presented with either idea unit standard feedback, expert examples, both measures or no comparison standard. Results show that students were overconfident in judging their examples, however, the groups that were provided with expert examples showed lower bias scores and enhanced absolute accuracy. The provision of idea unit feedback did not improve judgment accuracy. In sum, providing learners with expert examples for comparison can substantially foster judgment accuracy and needs to be further investigated to expand possible benefits.

#### **Session H 5**

20 August 2021 11:30 - 12:30

Session Room 7

Single Paper

Assessment and Evaluation, Culture, Morality, Religion and Education, Instructional Design

#### **Quantitative and Qualitative Methods**

**Keywords:** Attitudes and Beliefs, Content Analysis, Culture, Educational Policy, Qualitative Methods, Quantitative Methods, School Effectiveness, Self-regulation, Social Sciences, Teaching Approaches, Vocational Education

**Interest group:** SIG 01 - Assessment and Evaluation, SIG 14 - Learning and Professional Development, SIG 21 - Learning and Teaching in Culturally Diverse Settings

**Chairperson:** Funda Kelahmetoğlu Tunçer, Middle East Technical University, Turkey

#### **National Identity and Sense of Belonging of Students in Germany with Immigration Backgrounds**

**Keywords:** Attitudes and Beliefs, Culture, Quantitative Methods, Social Sciences

**Presenting Author:**Beatriz Matafora, University Duisburg-Essen, Germany; **Co-Author:**Hermann J. Abs, University of Duisburg-Essen, Germany; **Co-Author:**Katrin Hahn-Laudenberg, University of Wuppertal, Germany

Researchers postulate that young people with immigration background who identify with their country of residence and simultaneously with their (or their parents') country of origin have the highest potential for adaptivity and should therefore achieve the highest level of academic competencies (Edele et al., 2013). Hence it is relevant to analyze how much students with immigration background identify with their host and home countries. This paper aims to examine whether a picture of a widespread lack of national identification of students with immigration backgrounds in Germany corresponds to the empirical (real) situation, or whether the primary problem lies in the research instruments and analytical methods used to assess concepts such as national identification and a sense of belonging. Furthermore, it intends to raise awareness for the issues of transnationality and the German historical relationship with feelings of nationalism which are not addressed in widely used research instruments. Drawing on data from ICCS 2016, which allows comparisons between 24 participating educational systems, it is possible to observe that German students with and without immigration background present low scores in all items of the scale on national identity. However, 90% of German students with immigration background feel a sense of belonging to Germany. These results corroborate the hypothesis that developing and analyzing research instruments without considering national and cultural contexts might jeopardize results. Levels of identification of German migrant students with Germany are not alarming low, on the contrary, they are quite high when assessed by direct questions which do not refer to national symbols.

#### **Nudging Autonomous Learning Behavior: How Do Teachers in Vocational Education Nudge their Students?**

**Keywords:** Qualitative Methods, Self-regulation, Teaching Approaches, Vocational Education

**Presenting Author:**Robert Weijers, Erasmus University Rotterdam, Netherlands; **Co-Author:**Björn de Koning, Erasmus University Rotterdam, Netherlands; **Co-Author:**Ellen Klatter, Hogeschool Rotterdam, Netherlands; **Co-Author:**Fred Paas, Erasmus University Rotterdam/University of Wollongong, Netherlands

Despite the relevance of autonomous learning behavior for successful learning, many students in vocational education and training (VET) do not engage in it. Nudging, a strategy from behavioral economics that aims to subtly influence behavior by changing the environment, provides a potential way to help teachers promote students' autonomous learning behavior. In this qualitative study, we interviewed 22 VET-teachers, 11 VET-teacher-trainers and 15 VET-students, and conducted 11 classroom observations to investigate what nudges are already in use and what kinds of autonomous learning behaviors teachers seek to promote. Results showed that many teachers practice nudging; the nudges they use are largely spontaneous and based on didactic techniques. Additionally, this research provides an overview of autonomous learning behaviors teachers wish to support better, distinguishing between required and enriching autonomous learning behaviors. The mentioned autonomous learning behaviors are suitable targets for new interventions that are aimed at promoting autonomous learning behavior.

#### **Capturing equity. Educational equity in secondary analyses on ILSAs: a systematic review**

**Keywords:** Content Analysis, Educational Policy, Quantitative Methods, School Effectiveness

**Presenting Author:**Lies Appels, University of Antwerp, Belgium; **Co-Author:**Sven De Maeyer, Antwerp University, Belgium; **Co-Author:**Jerich Faddar, University of Antwerp, Belgium; **Co-Author:**Peter Van Petegem, University of Antwerp, Belgium

**Abstract**The discourse of equity has permeated everyday discussion about education. Moreover, during the constant struggle to improve educational equity governments have increasingly devoted attention to the results of highly standardized international large-scale assessments. As those results are used to inform policy decisions to improve countries' educational equity, it is important to understand how this concept of equity is handled. Lacking a synthesis on how equity is

conceptualized and operationalized in this body of research, the current paper seeks to fill that gap by presenting a systematic review. Our analysis incorporated an identification of operational patterns and an exploration regarding the linguistic elements for defining equity. We charted the theoretical and methodological diversity in the interpretations of equity as clustered into five major research approaches. By drawing on the reviewed scholastic work we outline both the diversities and similarities in the conceptualization and operationalization. In the light of these results, benefits and limitations of the concept's complexity are discussed and implications for research are forwarded. *Keywords:* Educational equity; Conceptualization; Operationalization; International large-scale assessments

#### Session H 6

20 August 2021 11:30 - 12:30

Session Room 2

Single Paper

Assessment and Evaluation, Learning and Social Interaction

##### Literacy

**Keywords:** Achievement, Cooperative/Collaborative Learning, Early Childhood Education, Emotion and Affect, Literacy, Qualitative Methods, Second Language Acquisition, Self-regulation

**Interest group:** SIG 01 - Assessment and Evaluation, SIG 05 - Learning and Development in Early Childhood, SIG 10 - Social Interaction in Learning and Instruction

**Chairperson:** Belinda Merkle, University of Mannheim, Germany

##### Exploring the role of the emotional process in feedback contexts at the university

**Keywords:** Achievement, Emotion and Affect, Literacy, Self-regulation

**Presenting Author:**Mathieu Hausman, ULiège, Belgium; **Co-Author:**Dominique Verpoorten, ULiège, Belgium; **Co-Author:**Pascal Detroz, ULiège, Belgium

In the last decade, the scientific literature on feedback seems to have made a significant shift. Feedback, considered for a long time as a product, elaborated and transmitted by a teacher to a student, is now considered more as a process, in which the latter is actively involved. Moreover, a growing body of research attests to the significance of emotions in learning situations. This context led us to try to better understand the way emotions occur and their effects in feedback situations experienced by students at university. To this aim, we initiated a Grounded Theory research. At this initial stage of the research, the results we obtained allowed ourselves to develop a first model of the investigated process. This model structures the sequence in which students receive and interpret academic feedback. It is organized in a sequential manner and determines the timing and modalities by which emotions influence the processing of feedback preceding a potential regulation of learning strategies. The further development of this research should allow us to elaborate on this initial modeling, particularly by meeting more students and by exploring in greater depth the most significant aspects of this process.

##### Unfolding joy in Finnish ECE: A new materialist investigation into affect during a Storybook project

**Keywords:** Early Childhood Education, Emotion and Affect, Literacy, Qualitative Methods

**Presenting Author:**Alexandra Nordström, University of Helsinki, Finland; **Co-Author:**Kristiina Kumpulainen, University of Helsinki, Finland; **Co-Author:**Antti Rajala, University of Helsinki, Finland

Affect and emotion play a pivotal role in young children's literacy practices and in literacy learning and teaching, and contribute to children's general well-being and learning outcomes. However, surprisingly little research attention has been directed to understanding and conceptualising affects and emotions in the social and material relations in early years classrooms. This qualitative study examines the unfolding joy in young children's literacy practices in a Finnish early childhood education (ECE) centre. We demonstrate the unfolding of joy in intra-action among children, adults and materials during literacy learning endeavours by thinking *with* new materialist theories, and the data from an early years multiliteracies project named The Storybook. Our goal is to draw attention to previously overlooked material and relational dimensions of young children's joy in its moment-to-moment unfoldings. We illustrate this argument by examining how joy unfolds unexpectedly in a moment where children, adults, Storybooks and other material resources intra-act.

##### Reading circles: Knowledge co-construction with learners of English as a Second Language

**Keywords:** Cooperative/Collaborative Learning, Literacy, Qualitative Methods, Second Language Acquisition

**Presenting Author:**Madeleine Strobel, University of Glasgow, UK, Sweden

To build responsible and just societies, the UN Agenda 2030 (UNESCO, 2016) argues for a world-wide educational focus on global citizenship and sustainable development. Foreign language education, with its intercultural learning aims, plays an important role in achieving these purposes (Byram et al., 2013), and can facilitate intercultural experiences in language classrooms by using literary texts (Bland, 2020). However, this involves the pedagogic dilemma of considering the cognitive processing load of reading in a second language (Grabe, 2009) against the potential benefits of aesthetic, intercultural, and language learning experiences. This paper presents preliminary findings from a non-interventional classroom observation study of reading circles with young adult Swedish learners of English as a Second Language, aiming to understand how small-group conversations about novels in the target language can mediate language learning and meaning making. Drawing on sociocultural perspectives (Säljö, 2013; Vygotsky, 1978; Stetsenko, 2017), this qualitative PhD case study explores how the learners' conversations in English contributed to the co-construction of meaning and how language supported their meaning making. Expanding on Mercer's (1995; 2000) and Swain and colleagues' work (Swain et al., 2009; Swain and Watanabe, 2019), the learners' conversations involved communicative patterns of using language to generate new and deeper knowledge about the literary texts. This languaging process involved e.g., counterarguments, elaborations, reformulations, and the uniting of perspectives. Led by the narrative arches of the literary texts, the learners focused on the characters' struggles and attempted to understand their feelings and motivations, both empathising with and rejecting their actions and decisions. Consistent with Stetsenko's (2017) view on human development, the learners' meaning making included not only the processing of language and story, but also the problematization of accountability, ethical and moral commitment, responsibility, and personal values.

#### Session H 7

20 August 2021 11:30 - 12:30

Session Room 1

Single Paper

Learning and Instructional Technology, Learning and Social Interaction

##### Self-regulation

**Keywords:** Assessment Methods and Tools, Cognitive Skills, Developmental Processes, Language (Foreign and Second), Learning Technologies, Metacognition, Peer Interaction, Self-regulation, Student Learning

**Interest group:** SIG 16 - Metacognition

**Chairperson:** Hannah Bijlsma, University of Twente, Netherlands

##### Developmental Differences in Vocabulary Learning Strategy at Secondary Education Level

**Keywords:** Developmental Processes, Language (Foreign and Second), Self-regulation, Student Learning

**Presenting Author:**Nao Uchida, The University of Tokyo, Japan

In foreign language learning, learners need to acquire and apply appropriate learning strategies to regulate vocabulary learning by themselves. Learners' vocabulary learning strategy use would change depending on existing knowledge and learning contents, and the effectiveness of the strategies would also

change as learning progresses. Thus, the current study focused on English vocabulary learning during secondary education and aimed to investigate the change in learners' strategy use. In this study conducted in Japan, 537 junior high school and high school students participated in a survey for data collection. A vocabulary size test and the questionnaires on vocabulary learning beliefs, vocabulary learning goals, and vocabulary learning strategies were used. A one-way ANOVA was conducted to compare the participants' learning strategy use between grade levels. A multiple population analysis was also performed to examine the relationships between the variables and identify their differences between the junior high school (7th-9th grades) and the high school (10th-12th grades) groups. The results showed significant differences in strategy use. Furthermore, the relationships between the variables also differed between the junior high school and the high school groups. It was shown that the learners' strategy use, especially associating their knowledge, was critical for vocabulary acquisition in upper grades, while their use of the association strategy stagnated or even decreased. These results indicated a gap between adaptive change and actual change. The changes suggested in this study were considered from the cross-sectional comparison of the learners in each grade; thus, further studies focused on the change in strategy use are needed.

#### **Does feedback on students' diagramming affect monitoring accuracy of their text comprehension?**

**Keywords:** Cognitive Skills, Learning Technologies, Metacognition, Self-regulation

**Presenting Author:**Sophia Braumann, University Utrecht, Netherlands; **Co-Author:**Janneke van de Pol, Utrecht University, Netherlands; **Co-Author:**Héctor J. Pijera-Díaz, Maastricht University, Netherlands; **Co-Author:**Ellen Kok, Utrecht University, Netherlands; **Co-Author:**Anique de Bruin, Maastricht University, Netherlands; **Co-Author:**Tamara Van Gog, Utrecht University, Netherlands

Accurate self-monitoring of text comprehension is critical for effective self-regulated learning from texts. Unfortunately, it has been repeatedly shown that students' monitoring of their own text comprehension is often inaccurate which can subsequently lead to inaccurate regulation (i.e., restudy) decisions. Previous research has also shown that completing causal diagrams at a delay after text reading (diagramming) can help to improve students' monitoring of text comprehension. However, even after diagramming, there is still substantial room for improvement. The current study, therefore, aimed to test whether providing feedback in the form of a performance standard (i.e., a correctly completed diagram) would further increase students' monitoring accuracy. Eighty participants were assigned to four conditions resulting in a 2x2 design with between-subjects factors diagramming (yes/no) and receiving a correct diagram (yes/no): I. text study only (+ filler-task), II. text study + diagramming, III. text study + diagramming + correct diagram, IV. text study + correct diagram. In each condition, students studied a text, made a judgment of learning before and after the experimental tasks, and completed a comprehension test at the end of each of the (overall six) trials. Results showed that diagramming did not improve monitoring accuracy while receiving a correctly completed diagram did, independently of whether participants preceding completed a diagram themselves. Text comprehension was better for those who viewed a correct diagram than for those who did not. Our results underline the significance of providing some sort of feedback (such as completed diagrams) in interventions targeting text comprehension and monitoring accuracy.

#### **Individual & collaborative self-regulatory support: peer assessment & video feedback in an EFL task**

**Keywords:** Assessment Methods and Tools, Language (Foreign and Second), Peer Interaction, Self-regulation

**Presenting Author:**Rebecca CLAYTON BERNARD, IMT Atlantique, France

Self-regulated learning (SRL) includes the cognitive, metacognitive, behavioral, motivational, and emotional/affective aspects of learning. The conceptualization of self and socially regulated learning (SSRL) has recently received much attention and peer assessment (PA) has been found to increase the use of metacognitive activity. The present study aimed to identify self-regulatory strategies in oral English as a Foreign Language (EFL) tasks. We studied the SR strategies deployed by 10 learners within the context of a PA task using an assessment form paired with video feedback in the context of English language learning at a French university. These interactions were filmed and discussed in individual self-confrontation interviews. Our study reveals three key findings in line with an evolution of the literature towards a more socio-constructivist approach: firstly, the role played by experience in supporting learners in their roles as assessors and assessees. Second, that PA can be enhanced as a truly collaborative activity in which learners interact, construct goals and meaning together, and regulate their strategic behaviours together. Third, that appropriate contextual affordances can stimulate self-feedback and SSRL. And finally, a recognition of the need to ensure psychological safety as a condition for successful PA activities.

#### **Session H 8**

20 August 2021 11:30 - 12:30

Session Room 4

Single Paper

Cognitive Science, Instructional Design

#### **Mathematics, Numeracy and Problem Solving**

**Keywords:** Cognitive Skills, Content Analysis, Early Childhood Education, Instructional Design, Interdisciplinary, Learning Approaches, Mathematics, Neuroscience, Numeracy, Problem Solving, Science Education, Student Learning

**Interest group:** SIG 06 - Instructional Design, SIG 22 - Neuroscience and Education

**Chairperson:** Agnes Cichy, University of Regensburg, Germany

#### **A conceptual framework of concreteness for aligning multiple representation of varying concreteness**

**Keywords:** Content Analysis, Instructional Design, Mathematics, Science Education

**Presenting Author:**Xiaoshan Huang, University of Turku, Department of Teacher Education, Finland; **Co-Author:**Tomi Jaakkola, Tampere University, Finland;

**Co-Author:**Koen Veermans, University of Turku, Finland

Developed to promote the transfer of learning, concreteness fading has been indicated that generates inconsistent learning and transfer outcomes in the existing empirical research. The discrepancies might originate from the under-specification of the framework of concreteness in providing useful concrete to abstract transition that connects with the learning and transfer. To fill in the discrepancies, the current study developed an alternative conceptual framework of concreteness consisting of three dimensions: objectivity, familiarity, and relevance based on the reviewed theoretical frameworks defining concreteness and concreteness fading theory. While the objectivity dimension is similar to the previous frameworks defining concrete and abstract representation, the familiarity and relevance dimensions are proposed to make connections in representations to prior knowledge (familiarity) and the targeted knowledge (relevance) explicit. The current study further examined how the existing empirical research defined and operationalized the three dimensions, which provides comprehensive descriptions of the three dimensions to guide the design of learning representation for concreteness fading. Research findings also indicate that the familiarity and relevance dimensions are often defined and operationalized implicitly, in some cases, not at all, which might well explain the research discrepancies. The findings of the empirical outcomes of concreteness fading intervention indicate that there is significant variation in the design of concreteness and the assessment of transfer performance. More empirical research is needed to examine the impact of well-addressed three dimensions of concreteness on learners' learning and transfer performance. Moreover, developing a comprehensive assessment model of transfer is essential to understand the impact of these three dimensions rigorously.

#### **Physical Activity, Motor skills, Executive Functions and Early Numeracy in Preschoolers**

**Keywords:** Cognitive Skills, Early Childhood Education, Interdisciplinary, Numeracy

**Presenting Author:**Anssi Vanhala, University of Helsinki, Finland; **Co-Author:**Eero Haapala, University of Jyväskylä, Faculty of Sport and Health Sciences, Finland; **Co-Author:**Arja Sääkslahti, University of Jyväskylä, Faculty of Sport and Health Sciences, Finland; **Co-Author:**Airi Hakkarainen, University of Helsinki, Finland; **Co-Author:**Pirjo Aunio, University of Helsinki, Finland

We investigated direct and indirect cross-sectional associations of moderate and vigorous physical activity, fundamental motor skills, executive functions and early numeracy in preschoolers. The participants were 214 preschoolers aged 3-5 years. Early numeracy skills were measured using Early Numeracy Test including tasks for numerical relational and counting skills. Inhibition/switching and working memory/updating, as components of executive functions, were

assessed by computerized tests (the Flanker and Pictorial updating tasks). Locomotor and object control skills were measured by TGMD-3, and stability skills using jumping sideways and balancing beam tasks from the KTK-test battery and one-leg stance from the M-ABC-2-test battery. Moderate and vigorous physical activity were assessed by accelerometers (Actigraph wGT3X-BT). Path analysis were used to examine direct and indirect associations in the analysis. Our results showed that locomotor skills were positively associated with early numeracy through working memory/updating. Stability skills were positively associated with early numeracy directly and indirectly through inhibition/switching. Vigorous physical activity was directly and positively associated with working memory /updating. Vigorous physical activity was positively associated with early numeracy through locomotor skills and working memory/updating. Moderate physical activity was negatively associated with both components of executive functions. There were also negative indirect association between moderate physical activity and early numeracy through inhibition/switching. These findings indicate that promoting vigorous physical activities and the development of fundamental motor skills may be beneficial for executive functioning and early numeracy skills in 3-5 years old preschoolers.

#### **The Physiological and Neural Mechanisms of Learning through Productive Failure**

**Keywords:** Learning Approaches, Neuroscience, Problem Solving, Student Learning

**Presenting Author:** Cléa Formaz, ETH Zurich, Switzerland

Productive Failure is a learning design that entails conditions for learners to persist in generating and exploring representations and solution methods for solving complex, novel problems prior to formal instruction. There is a growing body of evidence coming from behavioral studies that generating solutions to novel problems prior to instruction can help students to perform better on certain types of learning, including conceptual understanding and transfer of knowledge. Recent research on productive failure has indicated cognitive mechanisms for why students learn better after encountering difficulties; however, the physiological mechanisms underpinning this process have yet to be explored. Empirically supported theories in neuroscience suggest a connection between neural activity, heartbeats and cognitive processes. The present study is designed to explore physiological mechanisms underlying the process of learning from productive failure, focusing on neural signature and heartrate variability measurements. In particular, we build a deeper explanatory basis of productive failure by exploring the underlying neural basis and the impact of different heartbeat measurements on learning through productive failure.

#### **Workshops II 1**

20 August 2021 13:30 - 14:30

Session Room 2

JURE 2021 Workshop

#### **Writing peer reviews of research articles**

**Keywords:** Assessment Methods and Tools, Peer Interaction, Researcher Education, Writing/Literacy

#### **Interest group:**

In this workshop the task of writing peer reviews of scientific articles in the field of education will be discussed. By using real world examples, I will present some possible options in how to approach the task, with a focus on the style I prefer myself, which is a style that follows a particular structure. I will discuss some dilemmas for the task of reviewing, like for example regarding how much advice and suggestions for improvements to include. I will also discuss why writing reviews can help you write better papers and why it is a worthwhile job, despite taking quite a lot of normally unpaid time.

#### **Writing peer reviews of research articles**

**Presenting Author:** Ola Helenius, University of Gothenburg, Sweden

In this workshop the task of writing peer reviews of scientific articles in the field of education will be discussed. By using real world examples, I will present some possible options in how to approach the task, with a focus on the style I prefer myself, which is a style that follows a particular structure. I will discuss some dilemmas for the task of reviewing, like for example regarding how much advice and suggestions for improvements to include. I will also discuss why writing reviews can help you write better papers and why it is a worthwhile job, despite taking quite a lot of normally unpaid time.

#### **Workshops II 2**

20 August 2021 13:30 - 14:30

Session Room 6

JURE 2021 Workshop

#### **Grounded Theory: Coding procedures and construction of theory**

**Keywords:** Action Research, Secondary Data Analysis, Social Aspects of Learning and Teaching, Social Interaction

#### **Interest group:**

Grounded Theory is a method for discovering and researching social phenomena and for developing models and theories about areas of social life. Grounded theory studies have an action and process orientation and are constructed through various procedural steps of permanent comparison of data - coding. The aim of the workshop is to familiarize the participants with the epistemological background as well as the basic procedures and techniques of Grounded Theory, specifically with Open, Axial Coding. Following Strauss/Corbin and Charmaz, practices of coding will be performed on different types of data.

#### **Grounded Theory: Coding procedures and construction of theory**

**Presenting Author:** Kathrin Berdelmann, German Institute for International Educational Research (DIPF), Germany

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#### **Workshops II 3**

20 August 2021 13:30 - 14:30

Session Room 5

JURE 2021 Workshop

#### **Variation Theory of Learning: What is different and what is the same?**

**Keywords:** Learning Approaches, Phenomenography, Student Learning, Teacher Effectiveness

#### **Interest group:**

The target of this workshop is to show how variation theory of learning, can be used in educational research, both as a theoretical framework and as a tool for designing learning opportunities. Variation Theory clarifies that individuals, see the world from their own perspectives. Accordingly, to improve learning teachers have to help students to develop their own ways to experience the phenomenon (object of learning). This learning theory emphasizes "variation" as a necessary condition for learners to be able to discern new aspects of an object of learning. The core tenet of variation theory is that people learn through experiencing differences and similarities (in this order). By giving some examples from research on different disciplines, this workshop will clarify how learning takes place and how teachers can help students develop "powerful ways of seeing" so that students can learn in a sustainable way.

#### **Variation Theory of Learning: What is different and what is the same?**

**Presenting Author:** Hanan Innabi, Göteborg University, Sweden

The target of this workshop is to show how variation theory of learning, can be used in educational research, both as a theoretical framework and as a tool for designing learning opportunities. Variation Theory clarifies that individuals, see the world from their own perspectives. Accordingly, to improve learning teachers have to help students to develop their own ways to experience the phenomenon (object of learning). This learning theory emphasizes "variation" as a necessary condition for learners to be able to discern new aspects of an object of learning. The core tenet of variation theory is that people learn through experiencing differences and similarities (in this order). By giving some examples from research on different disciplines, this workshop will clarify how learning takes place and how teachers can help students develop "powerful ways of seeing" so that students can learn in a sustainable way.

#### **Workshops II 4**

20 August 2021 13:30 - 14:30

Session Room 1

JURE 2021 Workshop

#### **Introduction to Mixed methods**

**Keywords:** Design-based Research, Mixed-method Research, Qualitative Methods, Quantitative Methods

#### **Interest group:**

This workshop offers an introduction to mixed methods research to help participants identify mixed methods research and prepare participants for how to describe various types of mixed methods designs – for articles, conference papers and doctoral theses. In the workshop, we will start out with an example of teenagers playing online games in their spare time and reflect on the mixed methods design of the study. In the second part of the workshop we will discuss the advantages and disadvantages of using mixed methods and what distinguishes mixed methods from qualitative and quantitative research designs. Finally, we will discuss concrete ideas for the use of mixed methods in your own research. This workshop is aimed at researchers with little or no knowledge about the use of mixed methods.

#### **Introduction to Mixed methods**

**Presenting Author:**Lisbeth M Brevik, University of Oslo, Norway

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