

Conference Annotations:

Please note that lunch is served from 12:30 - 13:30. From 13:30 - 14:00 the rooms will be cleaned ahead of the start of the next session.

Session A 1

24 June 2024 11:00 - 12:30

Aula 12

Single Paper

Culture, Morality, Religion and Education, Educational Policy and Systems

Tackling Challenges in Early Childhood Education

Keywords: Attitudes and Beliefs, Classroom Management, Climate Change, Comparative Studies, Early Childhood Education, Educational Policy, Environmental Education, Migrant / Refugee and Minority students, Parents' Beliefs and Affect, Qualitative Methods, Quantitative Methods

Interest group: SIG 05 - Learning and Development in Early Childhood

Chairperson: Idwer I Dooje, Universiteit Utrecht / Hogeschool Utrecht, Netherlands

Preservation of a minority home language: A family language policy perspective in Southwest China

Keywords: Early Childhood Education, Migrant / Refugee and Minority students, Parents' Beliefs and Affect, Qualitative Methods

Presenting Author:Keang Ieng Vong, The University of Macau, China; **Co-Author:**Sio Fan (Lisa) Lam, University of Macau, Macao; **Co-Author:**Bing Wei, University of Macau, Macao

This study investigated the family language environment of the ethnic Miao residing in southwestern China to understand the preservation of a Miao language via the lens of family language policy (FLP). The research aimed to understand how language attitudes, practices, and management within Miao households contribute to the maintenance or decline of their native language. To achieve a comprehensive understanding, the study employed a triangulated methodology, incorporating interviews, participant observations, visual data and field notes. Findings revealed a language attitude that (1) Differentiated Recognition of Miao language and Putonghua, while inclining to the latter and leading to (2) Holistic vs. retrospective approaches respectively as their language practice, hence shaping their language management. The differentiated language attitudes resulting in double level of practice and management challenges the status quo of seeing FLP as consisting of only the three componential parts. In light of these findings, the study proposes holistic and immersive approach for the preservation of minority languages borrowed from that for preservation of Putonghua.

Exploring Nature Worldviews in Environment-themed Children's Books Across Cultures

Keywords: Climate Change, Early Childhood Education, Environmental Education, Quantitative Methods

Presenting Author:Sabiha Üzümlü, Middle East Technical University, Türkiye; **Presenting Author:**Ceren Baser Kanbak, Middle East Technical University, Türkiye

The current study aimed to examine whether the cultural context in which children's storybooks were written, along with the environmental themes they addressed, can predict the worldview towards nature conveyed by these storybooks. With this aim, 33 children's storybooks concerning environment were published in Türkiye for three- to six-year-old children and analyzed. In the analysis, the storybooks are deductively coded by two researchers in terms of the country they originally published, the environmental themes they carried on, and the worldview towards nature they conveyed. The data was analyzed employing binary logistic regression analysis. The study revealed that the worldview towards nature that the storybooks conveyed was related to the culture they had originally written. In that, the children's storybooks, initially written in individualistic cultures, conveyed a more anthropocentric worldview towards nature. In contrast, the storybooks from collectivistic cultures conveyed a more non-anthropocentric worldview towards nature. Moreover, it was revealed that the storybooks concerned biodiversity were the most common theme focused in children's storybooks; therefore, more likely to provide insight into worldviews towards nature than the other environmental themes concerned in children's storybooks. Thus, diversifying the environmental themes discussed and including more non-anthropocentric worldviews in children's storybooks from countries with an individualist culture may contribute to children's recognition and understanding of nature and environmental problems, and respect for the integrity of nature as a part of it. **Keywords:** children's storybooks, culture, environment, worldview towards nature

Overview of violence against children focusing on child disciplinary practices – A global scenario

Keywords: Attitudes and Beliefs, Classroom Management, Comparative Studies, Educational Policy

Presenting Author:Shweta Hegde, Martin-Luther-Universität Halle-Wittenberg, Germany, Germany

Violence against children occurs in every country and every culture in various forms (WHO, 2020). One of those forms of violence against children is violent discipline practices used by caretakers, teachers, or adults who are associated with children (Krug et al., 2002). Millions of children across the world face violent disciplinary practices, either physical or psychological, at schools, and they are detrimental to all aspects of a child's growth (UNICEF, 2010). The focus of this study is to examine violence against children, focusing on child discipline practices. The topic itself is interdisciplinary. Furthermore, this topic is in alignment with the United Nation's Sustainable Development Goals (SDG): Quality Education (SDG:4) and Peace, Justice, and Strong Institutions (SDG:16). This paper aims to explain the theoretical background and the causal attitude model developed to study "experiences and opinions of young adults regarding disciplinary practices experienced at schools and home from their childhood. In addition, this study also involves parents and teachers to share their opinions and perspectives. The international perspective of this study will broaden the wide range of applications of the findings. A causal analytic model was created and adopted for this study, and samples were collected from India and Germany. Qualitative and quantitative research approaches were employed. The Findings indicate that the legal prohibition of corporal punishment has resulted in the use of increasingly psychologically violent discipline methods. However, there is a lack of effective alternative disciplinary approaches to avoid psychological harm because every child has the right to get a safe upbringing and learning atmosphere irrespective of any country or culture. **Keywords:** Classroom Management, Attitude and beliefs, educational policy, Comparative studies

Session A 2

24 June 2024 11:00 - 12:30

Aula Máster 1

Single Paper

Learning and Instructional Technology, Learning and Special Education

Reading Comprehension

Keywords: Cognitive Skills and Processes, Comprehension of Text and Graphics, Eye Tracking, Metacognition, Reading, Secondary Education, Special Education

Interest group: SIG 02 - Comprehension of Text and Graphics, SIG 15 - Special Educational Needs

Chairperson: Evropi Efthymiadou, Aristotle University of Thessaloniki, Greece

Learning Context Moderates the Effects of Reading Medium on Comprehension and Metacomprehension

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

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

Meta-analyses primarily involving participants in higher education, indicate that reading comprehension tends to be better on paper than on screens. However,

limited research is available on the potential moderating role of contextual factors, such as the use of supporting learning strategies and increased familiarity with digital devices for learning purposes, especially in younger students who increasingly engage with digital texts in educational settings. This study sought to examine whether the use of a basic learning strategy – text highlighting – and increased familiarity with digital learning devices can moderate the impact of reading medium (paper vs. screen) on reading time, metacomprehension, and comprehension in lower secondary-school students. The study involved seventh graders (N=126) attending schools with different teaching modalities, that is, traditional or digitally-based. Participants read two long expository texts, adapted from textbooks, one on paper and the other on screen, covering the topics of earthquakes and volcanoes. Reading time (RT) was recorded, and students self-evaluated their comprehension by predicting their performance at the comprehension task. Calibration bias was calculated as the difference between students' metacognitive self-evaluation of comprehension and actual comprehension performance, which was assessed using multiple-choice questions. Results revealed that digital students were faster in highlighting the text on screen compared to paper. Additionally, highlighting led to a more accurate calibration of comprehension, but only when reading on the more familiar reading medium. In a similar way, students' comprehension was also better when reading using the medium students were more accustomed to, regardless of the use of highlighting. Overall, our results suggest that increased familiarity with digital devices could counteract the negative effect of digital reading.

Eye-movement patterns while reading a text with images in hearing and deaf children

Keywords: Comprehension of Text and Graphics, Eye Tracking, Metacognition, Special Education

Presenting Author: Adrián Solís-Campos, Universidad de Sevilla, Spain; **Co-Author:** Nadina Gómez-Merino, University of Valencia / Interdisciplinary Research Structure for Reading Research (ERI Lectura), Spain; **Co-Author:** Isabel R. Rodríguez-Ortiz, Universidad de Sevilla, Spain; **Co-Author:** David Saldaña, Universidad de Sevilla, Spain

The main objective of this research is to explore the reading behaviour of both deaf and hearing students when engaging with an illustrated text, employing eye-tracking analysis as a methodology. To our knowledge, no study has utilized eye-movement methodology with deaf readers to observe how they integrate visual and verbal information. The present study evaluated reading comprehension, metatextual knowledge, and strategic knowledge in a sample of 46 students, including 23 who were deaf. Following a similar paradigm to Jian et al. (2019), the research presented a text accompanied by two types of diagrams: one representative and the other explanatory. The use of eye movement measures led to the identification of four distinct clusters. Notably, the study's findings reveal that all cluster groups demonstrated similar performance in terms of reading comprehension, metatextual knowledge, and strategic knowledge, with no statistically significant differences distinguished among them. Deaf students utilized identical reading patterns as the general population, achieving comparable levels of reading comprehension, metatextual knowledge, and strategic knowledge in all instances.

The Role of Executive Functions in Reading Performance of Deaf and Hearing Young Adults

Keywords: Cognitive Skills and Processes, Metacognition, Reading, Special Education

Presenting Author: Marta Ortiz Gómez, Facultad de Psicología, Universidad de Sevilla, Spain; **Co-Author:** David Saldaña, Universidad de Sevilla, Spain; **Co-Author:** Fiona Kyle, Deafness, Cognition and Language (DCAL) Research Centre, University College London, United Kingdom; **Co-Author:** Ian C. Simpson, University of Granada, Spain; **Co-Author:** Isabel R. Rodríguez-Ortiz, Universidad de Sevilla, Spain

The reading ability of deaf students may vary due to several factors. Compared to their hearing peers, a significant percentage of deaf readers commonly achieve slightly lower scores, and these discrepancies persist over time. Recent research highlights that higher-level cognitive components, such as self-regulation and executive functions, play a crucial role in reading performance in the general population. However, this area has been explored to a limited extent, particularly in the deaf population. The study aims to investigate whether there are differences in the use of metacognitive strategies and the role of executive functions in reading comprehension between participants with severe or profound deafness (n = 33) and their hearing peers (n = 48) aged 18-35 years, all of them English speakers. An online experimental study was conducted to explore the relationships between these variables in each group. The experimental task involved several cognitive tests, including the Tower of London, N-Back, Go/No Go, Wisconsin Sorting Cards, Raven's Progressive Matrices, Adult Reading Test, and Metacognitive Awareness of Reading Strategies Inventory. The results did not show significant differences in reading comprehension and executive functions between the two groups. However, executive functions were observed to play a crucial role in predicting reading comprehension in deaf adults, especially working memory and planning skills were particularly important. This result suggests that executive functions can act as compensatory mechanisms for deaf people with limited language skills.

Session A 3

24 June 2024 11:00 - 12:30

Aula Máster 2

Single Paper

Higher Education, Learning and Social Interaction

Multicultural Education

Keywords: At-risk Students, Case Studies, Computer-assisted Learning, Cultural Diversity in School, Higher Education, Multicultural Education, Secondary Education, Self-efficacy, Social Aspects of Learning and Teaching, Sustainable Development

Interest group: SIG 07 - Technology-Enhanced Learning And Instruction, SIG 21 - Learning and Teaching in Culturally Diverse Settings

Chairperson: Lore Bellemans, University Ghent, Belgium

Conceptualizing Education for Sustainable Development in Urban Secondary Schools

Keywords: Case Studies, Multicultural Education, Secondary Education, Sustainable Development

Presenting Author: saphia zenasni, Vrije Universiteit Brussel (VUB), Belgium

This study explores the characteristics of education for sustainable development (ESD) within urban secondary schools, addressing a significant gap in existing research despite the widespread acknowledgment of sustainability's importance. The authors employed theory synthesis, which resulted in a concept for Education for Sustainable Development in Urban Contexts (ESDUC). This presents a comprehensive view of the interconnected characteristics that facilitate the successful implementation of ESD in urban secondary schools, (1) developing sustainability competences in both students and teachers, encompassing intercultural competences for teachers and self-regulating skills for students, (2) employing teaching methods that are both transformative and culturally responsive, (3) involving the broader community in the educational process, and (4) shifting the school culture towards embracing diversity and adopting a whole-school approach. This research holds particular value for both researchers and urban secondary schools aiming to integrate ESD into their educational framework effectively, offering insights into effective strategies and potential areas of improvement.

Exploring Students' Perceptions of Engaging in Anonymous Discussions in UK University Classrooms

Keywords: Computer-assisted Learning, Higher Education, Multicultural Education, Social Aspects of Learning and Teaching

Presenting Author: Peiyu Wang, University of Nottingham, United Kingdom

With the rapid increase of globalisation in education, the UK is one of the most popular destinations for international students pursuing higher education (HE). These students not only face learning new content, but also learning in new ways and in an additional language. Small group discussion is common in most of the social sciences and arts courses in the UK. Consequently, some international students may be reticent to participate in group discussions and that can have negative impacts on their and other students' learning experiences. One possible solution is to employ digital technology to create peer anonymous written discussions when students are anonymous to each other but not the teacher. Influenced by the Social Identity Model of Deindividuation, anonymity may help create a "safety net" for students, thereby encouraging them to engage in more group discussions. 56 postgraduate students in three seminar classrooms from a UK university experienced three types of group discussion (face-to-face spoken, online written real-name, and online written anonymous discussions) using a within-groups design over three weeks. After classroom intervention finished, 30 students completed an online survey, while 12 students completed semi-structured interviews voluntarily. Positively, the results showed that many participants improved their engagement in discussion when anonymous and using a

written mode. In addition, students experienced more fairness and flexibilities in sharing opinions. However, they also reported feeling a reduced connection to their peers and more off-task behaviours. These findings provided valuable insights into how to enhance face-to-face classrooms by replacing some oral discussions with written anonymous forms. **Keywords:** Computer Assisted Learning, Multicultural Education, Social Aspects of Learning and Teaching, Higher education.

Perceptions from Roma students regarding their sense of belonging to their school.

Keywords: At-risk Students, Cultural Diversity in School, Multicultural Education, Self-efficacy

Presenting Author: Norma Salgado Orellana, Universidad Autónoma de Chile, Chile

Research into the composition of contextual and personal factors pertaining to students has awakened a huge interest in educational studies given that it delivers a clear vision of the social and personal aspects that affect progress at school. Particularly, the Roma community and their relationship with school emerges as an important research topic, alongside national and European policy approaches to social inclusion. The present work aimed to analyse the perceptions of 305 students of Roma ethnicity (43.6% male, 56.4% female), aged between 12 and 18 years ($M=13.24$; $SD=2.08$), and enrolled on the last cycle of primary education and basic vocational training. Perceptions related to four aspects. Namely, teacher support, school belonging, education utility and academic self-efficacy. Selection of associations and schools was intentional given that the percentage of the Roma community resident in Andalusia was considered. Results revealed high scores for all the dimensions. Further, Mann-Whitney U-test outcomes indicated significant differences between male and female students in the dimensions of student support, education utility and school belonging. The dimension of teacher support most stood out as having a positive and significant relationship. Finally, implications of the outcomes are discussed in relation to other studies and to practice, especially, for interventions directed at promoting school progress. **Keywords:** Risk Students; Self-efficacy; Multicultural Education; Cultural Diversity in School.

Session A 4

24 June 2024 11:00 - 12:30

Aula 5

Poster Presentation

Teaching and Teacher Education

Pre-service Teachers' Professional Development

Keywords: Attitudes and Beliefs, Burnout, Classroom Management, Competencies, Early Childhood Education, Eye Tracking, Gender Issues, Inquiry Learning, Mathematics / Numeracy, Motivation, Pre-service Teachers, Qualitative Methods, Quantitative Methods, School Leadership, Social Aspects of Learning and Teaching, Teacher Professional Development

Interest group: SIG 05 - Learning and Development in Early Childhood, SIG 08 - Motivation and Emotion, SIG 11 - Teaching and Teacher Education, SIG 17 - Methods in Learning Research, SIG 20 - Inquiry Learning

Chairperson: Denis Moynihan, Dublin City University, Ireland

Why Voluntary Teach? The Motivation of Volunteer Student Teachers to Enter the Teaching Profession

Keywords: Motivation, Pre-service Teachers, Social Aspects of Learning and Teaching, Teacher Professional Development

Presenting Author: Yingying HE, University of Helsinki, Finland; **Co-Author:** Katriona Maaranen, University of Helsinki, Finland; **Co-Author:** Kirsi ja Tirri, University of Helsinki, Finland

Teacher shortages are a global concern, particularly in rural areas. One remedy has been the adoption of service-learning in teacher education. However, a deeper understanding of teachers' motivation in service-learning is required to improve teacher retention. Utilizing the Factors Influencing Teaching Choice (FIT-Choice) framework, this empirical study attempts to understand the reasons student teachers volunteer in rural China and the differences between volunteer and non-volunteer teachers in their motivation and perception of the profession. The sample includes 201 volunteer and 812 non-volunteer student teachers. The results validate the FIT-Choice scale for Chinese volunteer student teachers and reveal significant differences in most motivational factors between the two groups. Volunteer student teachers perceive the teaching profession as less demanding and more rewarding than their non-volunteer counterparts. Moreover, they express greater satisfaction with their career choice. This research advocates for voluntary teaching as a valuable pedagogical approach to teacher education and a means of addressing teacher shortages.

Difficulties and support during an inquiry practicum: Pre-service teachers and mentors' experiences.

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

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

Pre-service teachers (PSTs) must respond to current educational challenges, such as critical thinking and continuous improvement of teaching practice. Previous studies have focused on the balance between challenges, support and perceptions of inquiry, highlighting the need for facilitators during inquiry processes. Our study provides an in-depth analysis of an inquiry process during the practicum in pre-service teacher training to identify their difficulties in each phase and what support they consider the most helpful in overcoming these difficulties. In addition, we include the mentors' view of their students' difficulties and what support they gave them. Data were compared with the school mentors' perceptions about the PSTs' difficulties and the support they offered them. The participants were 14 PSTs and their 14 school mentors. The PSTs participated in two individual semi-structured interviews, and the school mentors answered two open-ended questionnaires. A qualitative thematic content analysis was carried out in different steps. The PSTs and mentors encountered more difficulties in designing and implementing an evidence-informed practice, especially in establishing the learning objectives of the pedagogical practice. In addition, another noteworthy difficulty for PSTs was finding and choosing appropriate articles to inform their practice. However, the school's mentors did not perceive this difficulty. For support, the PSTs especially highlighted when the school mentors gave them specific advice or information. The school mentors' perceptions of difficulties and support do not always match those of the PSTs. This study shows the need to create collaborative spaces where PSTs and school mentors share how the inquiry process is going and any difficulties that have arisen.

Teachers' new approach to Physical Literacy in Early Childhood Education

Keywords: Competencies, Early Childhood Education, Pre-service Teachers, Teacher Professional Development

Presenting Author: Vilija Gerasimovičienė, Vilniaus kolegija | Higher Education Institution, Faculty of Pedagogy; Mykolas Romeris University, Lithuania

Title: Teachers' new approach to Physical Literacy in Early Childhood Education Abstract. The concept of physical literacy (PL) describes the motivation, confidence, physical competence, knowledge and understanding that individuals develop in order to maintain physical activity at an appropriate level throughout their life. PL has received a lot of attention recently as a concept that encompasses and broadens the school discipline of physical education (PE). Even if it has been proposed as one of the Sustainable Development Goals by United Nations for 2030, the implementation of this concept in the educational system happens at contrasted stages in different countries. A recent review of physical literacy in Europe revealed that one of the biggest challenges facing researchers is the number of definitions, reflecting the diversity of approaches. In , the concept of physical literacy is still new and requires extensive educational research. According to WHO recommendations, is one of the countries where the promotion of physical activity is not considered a priority. One of the reasons for this is that there are still no provisions or long-term state-funded programmes in this area at the national level, and the model of physical literacy guidelines is still under development. Among the difficulties related to the implementation of PL, teachers' knowledge and representations of this concept can be identified as an obstacle. Teachers' PCK related to PL is supposed to be different from the PCK for physical education, with more content knowledge. Our research proposes to study the representations of early childhood teachers about PL in and their evolution through a teacher education programme on the topic. **Keywords:** *Early Childhood Education, Physical Literacy, Pre-service Teachers*

Early career teachers' professional agency in the classroom in Finland and China

Keywords: Burnout, Quantitative Methods, School Leadership, Teacher Professional Development

Presenting Author: Liyuan E, University of Helsinki, Finland

The dissertation study explored early career teachers' professional agency in the classroom and its associations with their burnout, perceived leadership vision, stress, attrition intention, and school size. The dissertation study consists of three sub-studies. Research data included two data sets: longitudinal survey data from early career teachers in Finland with a maximum of five years of teaching experience (N = 201 T1) to more experienced ones (N = 201 T2) and cross-sectional survey data from early career teachers in China in their first five years of teaching experience (N = 779). Survey data sets were analysed by latent profile analysis (LPA) and structural equation modelling (SEM). Thus, the study combined both person- and variable-centred approaches. Study I used LPA to examine the individual variations in Finnish teachers' professional agency in the classroom and its development. Three distinctive profiles were identified: high professional agency, moderate professional agency, and low professional agency. The changes detected in the three teachers' professional agency profiles varied. The profiles were associated with teacher groups, but not with stress, attrition intention or school size. Study II focused on Chinese teachers' professional agency and its associations with their experienced burnout by using SEM. The results showed teachers' professional agency as an integrative concept included motivation to learn, efficacy beliefs of learning, and intentional activities to manage new learning. The results also showed that teachers' professional agency was negatively related to their burnout. In Study III, interrelations between teachers' professional agency, leadership vision and school size were investigated and SEM was used. The results revealed that teachers' professional agency is positively related to their perception of leadership vision. Furthermore, the results showed teachers' professional agency in terms of collaborative learning is significantly higher in small schools than in big schools.

Does pre-service teachers' gaze in the classroom reflect their attitudes towards gender?

Keywords: Attitudes and Beliefs, Eye Tracking, Gender Issues, Pre-service Teachers

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

Teacher attitudes can increase educational disadvantages by lowering expectations of a certain group of students. Boys are affected by more negative attitudes whereas girls tend to be favored by teachers. To better understand the disadvantaged or preferred processes, we investigated in this multi-method study whether pre-service teachers' attitudes are also reflected in their gaze behavior. N = 136 pre-service teachers watched a classroom video while their gaze was recorded. In addition, they expressed their explicit (feeling thermometer) attitudes toward girls and boys and participated in an implicit association test (IAT) to measure their unconscious gender attitudes. Findings showed more and longer fixations on girls in the video and more favorable implicit and explicit attitudes toward girls. Linking these variables, we found a positive correlation between implicit attitudes and the number of fixations. These findings suggest that a positive attitude tends to influence the allocation of attentional resources toward a certain student group. This multi-method approach provides a valuable insight into the underlying processes of the behavioral correlates of attitudes. Implications for future research and for pre-service teacher education regarding awareness on teacher attitudes will be discussed.

Gender Inequalities among In-Service and Pre-Service Teachers in STEM

Keywords: Classroom Management, Eye Tracking, Gender Issues, Mathematics / Numeracy

Presenting Author: Özün Keskin, University of Augsburg, Germany

Teachers' professional vision can be defined as the ability of teachers to notice and reason about relevant classroom situations. Studies on professional vision often use eye-tracking technology to record teachers' eye movements during teaching events and make them accessible for further analyses. The present study extends past eye-tracking research on teacher professional vision by focusing on student heterogeneity. However, the focus in our study is gender as an aspect of heterogeneity. Previous studies show that female students have a higher chance of lack of motivation and interest in STEM and show more educational inequalities like performing poorly or lower school tracks in STEM. In addition, past research determines less cognitive respect and emotional support of teachers towards female students in STEM. This mainly influences the objective judgement and expectations of the teacher whereupon students' achievement is also affected. However, it is unclear how teachers perceive female students in STEM teaching situations. For this reason, we conducted an eye tracking-study to record momentary eye movements of in-service and pre-service teachers in classroom situations in STEM and investigate professionalism of in-service and pre-service teachers in heterogenous classrooms. We explored how eye-movement patterns (scanpaths) differ across in-service and pre-service teachers during different teaching phases in STEM. In an eye-tracking experiment, participants watched an authentic video of a STEM lesson. We used gaze patterns as an indicator for visual behavior. We extracted scanpath patterns, compared them qualitatively (common sub-pattern) and quantitatively (scanpath entropy) between in-service and pre-service teachers to represent teachers' visual behavior. These analyses contribute to further understanding biases in teacher professional vision in heterogenous school contexts. Implications for teacher education are discussed.

Session A 5

24 June 2024 11:00 - 12:30

Aula 1

Roundtable

Teaching and Teacher Education

Teacher Competencies and Skills

Keywords: Classroom Management, Competencies, Digitalisation, Educational Challenges, Gender Issues, Mixed-method Research, Primary Education, Social and Educational Injustice

Interest group:

Chairperson: Lisa Hirzler, Pädagogische Hochschule Heidelberg, Germany

Teacher competencies from the perspective of primary school children – a mixed-methods study

Keywords: Competencies, Digitalisation, Mixed-method Research, Primary Education

Presenting Author: Lisa Hirzler, Pädagogische Hochschule Heidelberg, Germany

This research project focuses on different dimensions of teacher professionalism which are examined from the perspective of primary school pupils. The theoretical basis is formed by the COACTIV competence model for teachers as well as ideas from the resonance theory by Hartmut Rosa. The aim is firstly to shed light on the extent to which primary school pupils' ideas about a professional teacher coincide with the dimensions of the COACTIV competence model, secondly to examine the differences in the subjective theories about professional teachers of the pupils depending on the time they spent in primary school, and thirdly what significance the teachers' ability to build and form relationships in the sense of the resonance theory plays in this context. In order to consider the characteristics of the target group of primary school children in the best possible way and to generate a preferably deep understanding of the points under investigation, these questions are addressed in a study with mixed-methods design. The results of the preceding quantitative computer-based survey study are deepened, complemented, and validated by one-on-one interviews. The analysis of the research results obtained will provide important insights for the further development of models of professional competence of teachers and especially for their adaptation for the primary education sector. In addition, the results will generate a practical perspective on the construct of professionalism in the teaching profession and the validated questionnaire will be the base for further developments of surveys for children using computer-based assessment.

Gender differences in teacher reactions to disruptive student behaviour? A video-based analysis

Keywords: Classroom Management, Educational Challenges, Gender Issues, Social and Educational Injustice

Presenting Author: Sophie Harms, Humboldt-Universität zu Berlin, Germany

Disruptive student behaviour (DSB) can be detrimental for teaching and learning processes as well as for teacher-student relationships. At the same time, consistent gender differences are reported in this area with boys disrupting the classroom more often than girls and being reprimanded more frequently. It is

unclear, however, whether there are also differences in teacher reactions to DSB depending on students' gender. The current research addresses this question and investigates whether teachers react differently to the same type of DSB when it is committed by boys versus girls. The analysis will be based on quantitative codings of video data from elementary school classrooms from Germany. Self-developed, low-inferent coding schemes are used for assessing student and teacher behaviour in the video recordings. Differences regarding the quality of teacher reactions will be considered, such as the strictness of teacher reactions as well as their prospective effectiveness in preventing future SDB. Findings will be discussed with regard to gender differences in teacher-student relationships and students' academic development.

Session A 6

24 June 2024 11:00 - 12:30

Aula 4

Roundtable

Educational Policy and Systems, Learning and Instructional Technology

Best of JURE - Roundtable

Keywords: Achievement, Curriculum Development, Digitalisation, Health-care Education, Instructional Design, Mathematics / Numeracy, Mixed-method Research, Motivation, Parental Involvement in Learning, Simulation-based Learning, Vocational Education and Apprenticeship Training, Writing / Literacy

Interest group: SIG 08 - Motivation and Emotion, SIG 14 - Learning and Professional Development

Chairperson: Natalia Molina Otero, University of Zurich, Switzerland

The role of family characteristics in a motivation and achievement intervention study

Keywords: Achievement, Mathematics / Numeracy, Motivation, Parental Involvement in Learning

Presenting Author: Lisa Benckwitz, IPN Leibniz Institute for Science Education, Germany; **Co-Author:** Bastian Carstensen, IPN - Leibniz Institute for Science and Mathematics Education, Germany

The present study plans to investigate the role of structural (e.g., SES) and process-related family characteristics (e.g., home numeracy activities) in the effectiveness of a comprehensive intervention that was designed to improve the mathematics achievement and motivation of students in Grade 5. Therefore, data from $N = 1,044$ students and $N = 459$ parents that was collected in three measurement points (T1 - T3) throughout a whole school year will be analyzed. The intervention program consisted of access to an adaptive e-learning program, remedial teaching lessons, and a motivation intervention. The study included three experimental groups who received variations of the intervention program and one control group. To investigate the moderating role of family characteristics on the intervention effects regarding students' achievement and motivation at T2 and T3, interactions between the dummy variables representing the experimental groups and the family characteristics will be tested in Mplus. Findings will be available at the time of the conference.

Transfer from simulation to reality: A novel approach to teach airway management in mountain rescue.

Keywords: Health-care Education, Instructional Design, Simulation-based Learning, Vocational Education and Apprenticeship Training

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

Abstract As the teaching and training of medical procedures in voluntary rescue organisations is often limited to simulations, it is important to focus on the transfer of these skills to real-life patients during their development. Research has shown that the design of the simulation has a strong impact on the transferability of the developed skills. The planned study aims to combine two established approaches in the design of medical simulations (4C/ID and Peyton's 4 step-approach) and evaluate the transfer of skills from a simulated manikin to a real-life patient. A sample size of approximately $N = 35$ mountain rescuers is planned. The participants will complete a one-day simulation training to learn and practice the intubation of patients via laryngeal mask. After completion, the participants will intubate a real-life patient undergoing planned surgery under professional anaesthetological supervision. A combination of qualitative and quantitative data will be collected. Participants and instructors will rate the skill development during training with self-efficacy ratings and an interview. The quality of skill transfer will be measured via intubation criteria on the simulated manikin and real-life patient. Lastly, participants will be asked about perceived differences of intubating the simulated and real patient. Results of the study will provide further insights in the skill development and transfer from simulated learning environments as well as valuable data to improve the presented training approach.

Scientific accompaniment of school reforms using mixed-methods designs

Keywords: Curriculum Development, Digitalisation, Mixed-method Research, Writing / Literacy

Presenting Author: Marina Grgic, Pädagogische Hochschule Bern, Switzerland

As part of the "reform@work" research project, the introduction of the modular media and ICT curriculum in Switzerland was analysed. A mixed-methods design was chosen to analyse the different facets and perspectives of this curriculum reform. A book is now planned to be published, which will not only present insights into the practical implementation of school reforms, taking into account regional and contextual particularities, but will also synthesise research findings. One chapter will take a closer look at the critical analysis of mixed-method designs in school reform studies and contribute to providing a theoretical framework and practical guidelines for the application of mixed-method approaches in school reform studies. During the roundtables, the draft of the book chapter will be presented and discussed with regard to various questions (e.g. How are mixed-methods designs actually applied in school reform research? Are the strengths and limitations of mixed-methods designs in the study of school reforms critically assessed? etc.). Participation in the roundtables aims to evaluate whether the chapter developed so far is internationally compatible and meets scientific standards. The roundtables also offer the opportunity to receive constructive feedback from colleagues in the field of educational science. With their in-depth knowledge and different perspectives, such experts can make a significant contribution to refining the draft chapter. The dialogue can also provide opportunities to become aware of the latest developments and trends in educational research, particularly with regard to mixed-methods approaches to school reform. These insights can significantly enrich the research approach. In addition, the roundtables provide a platform to network and interact with other researchers, allowing professional relationships to develop that may be beneficial for future research projects or collaborations.

Session A 7

24 June 2024 11:00 - 12:30

Aula 11

Roundtable

Learning and Instructional Technology

Technology-enhanced Learning and Instruction

Keywords: Artificial Intelligence, Cooperative / Collaborative Learning, E-learning / Online Learning, Environmental Education, Eye Tracking, Game-based Learning, Mixed-method Research, Multimedia Learning, Self-regulated Learning and Behaviour, Sustainable Development, Video-based Learning

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

Chairperson: Joy Muth, University of Vienna, Austria

Development of a gamified educational tool to train about climate change

Keywords: Cooperative / Collaborative Learning, Environmental Education, Game-based Learning, Sustainable Development

Presenting Author: Sara Torre, University of Bari, Italy

As gamified training allows to enhance engagement and motivation in many learning contexts, it's no wonder that it has been employed for training on such a

topical issue as climate change. Nevertheless, little is currently known on the effectiveness of collaborative gamified learning for enhancing learning on environmental sustainability. The present project is aimed at developing and testing a gamified training tool on climate change that includes collaborative game dynamics. To develop such an engaging tool, gamification mechanisms and dynamics could be based on the principles of the Self-Determination Theory. Because of the global scale of the environmental issue, researchers propose a form of gamification that engages not only the motivation and knowledge of single users but also the ability of a learning group to co-construct knowledge. Therefore, the present project proposes a collaborative approach to gamification. To facilitate development and coordination among collaborators, the project relies on following the ADDIE model (Analysis, Design, Development, Implementation, Evaluation) of instructional design. As the project is still a work in progress, development steps and potential challenges are discussed.

A proposed intervention study to measure the impact of chatbots on student learning

Keywords: Artificial Intelligence, Cooperative / Collaborative Learning, Mixed-method Research, Self-regulated Learning and Behaviour

Presenting Author:Rasmus Hansen, Aarhus University, Denmark

Peer feedback and cooperative learning are concepts that are often attributed with having an impact on student performance, and therefore a focus in the development of educational technology. The integration of Generative AI into higher education practices raises questions about its potential role in enhancing student learning. This submission discusses the use of LLM-based chatbots in educational settings, emphasizing the technology's unique ability to simulate interactions and conversation. The proposed study examines how chatbots can support learning through dialogical processes, thereby facilitating self-paced reflection and engagement with subject matter, that are traditionally assisted by peers. The proposed study aims to determine if students regularly using AI chatbots for reflection and feedback achieve comparable learning outcomes to those engaging in peer discussions, and potentially better outcomes than students practicing solo self-reflection. The following research question is therefore proposed: *How can AI chatbots support student learning through dialogical processes?* A quasi-experimental intervention study will be conducted with four groups: one using a chatbot, another encouraged to do reflections and feedback with peers, a third group focused on self-reflection and self-initiated feedback, and a control group without intervention. The study will use pre and post-test surveys to measure cognitive load, emotion, and immersion, as ways of evaluating student learning and retention. This research design builds upon a pilot study indicating that AI coaching significantly affects the style and characteristics of written feedback. The study is proposed as the main part of a future Ph.D. project, which is currently in the preparatory phase, that will also include a qualitative study based on observations and interviews, as well as a comparative Natural Language Processing analysis of feedback comments, to explore the broader impacts of AI chatbots on teaching and learning processes, this roundtable submission invites discussions and suggestions concerning both method and theory.

Does What Can Be Seen of the Instructor Matter? Instructor Video Visuals in Multimedia Learning

Keywords: E-learning / Online Learning, Eye Tracking, Multimedia Learning, Video-based Learning

Presenting Author:Yu-Jr Lan, Kyoto University, Japan; **Co-Author:**Emmanuel Manalo, Kyoto University, Japan

In recent years, the effects of adding instructor video to multimedia instructional materials have received much attention due increase in demand for distance and online education. However, previous research on this topic has been mixed and limited. In this proposed study, our purpose is to investigate how and why instructor video matters in multimedia learning by focusing on what can be seen of the instructor. University students will be asked to learn from two videos on the four Mandarin tones, one with the instructor from waist-up in a headshot style (headshot condition; HC) and one with only the instructor's mouth area (mouth condition; MC). While viewing the videos, participants' eye movements will be recorded, and learning performance on the identification and production of tones, and perceptions about learning, will be taken afterwards. We predict our results to align with our hypothesis that the learning performance in the HC condition would be better than the MC condition. In addition, we predict that participants' gaze fixations would be drawn to the face of instructor, and consider learning from the HC to be more enjoyable than the MC. These expected results would suggest that not only do relevant additional information from the instructor video matter, but also nonverbal cues the instructor provides. Findings from this study can contribute to knowledge about incorporating instructor video in multimedia instructional materials, and be used to improve the way multimedia instruction and learning materials are designed.

Workshops I 1

24 June 2024 14:00 - 15:30

Aula 13

JURE 2024 Workshop

Writing a successful research funding application

Keywords: Communication Skills, Competencies, Doctoral Education, Higher Education

Interest group:

This interactive workshop will focus on Top Tips for grant writing. This workshop will benefit researchers who are new to grant writing as well as those with grant writing experience. We will discuss common mistakes and shortcomings found in grant proposals as well as what reviewers might look for. As the workshop will include a focus on practical application and putting best practice into action, it is encouraged to come prepared with a concrete project idea and potential funding source. Don't miss this opportunity to refine your grant writing skills and enhance your chances of success.

Writing a successful research funding application

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

This interactive workshop will focus on Top Tips for grant writing. This workshop will benefit researchers who are new to grant writing as well as those with grant writing experience. We will discuss common mistakes and shortcomings found in grant proposals as well as what reviewers might look for. As the workshop will include a focus on practical application and putting best practice into action, it is encouraged to come prepared with a concrete project idea and potential funding source. Don't miss this opportunity to refine your grant writing skills and enhance your chances of success.

Workshops I 2

24 June 2024 14:00 - 15:30

Aula 14

JURE 2024 Workshop

Improving research rigour with Registered Reports

Keywords: Competencies, Experimental Studies, Qualitative Methods, Quantitative Methods

Interest group:

The credibility crisis in many sciences has inspired various reforms, including the widespread adoption of Registered Reports - now in over 350 journals spanning all scientific disciplines and also many humanities. Registered Reports provide one way to address shortcomings in the current way we manage research, right from the design of studies to their publication. The format requires pre-specifying why a design may crucially test a theory, what auxiliary assumptions are required for the experiment to be such a test, what outcome neutral tests are required in turn to test those assumptions, what specific crucial tests will therefore be used to test the theory (of the many tests that could be used), and why those tests could provide evidence for no effect of interest given the proposed numbers of trials and participants. Reviewers and authors are then constructively involved in optimizing the experiment before it is run. The agreement between reviewers and authors, as adjudicated by the editors, then defines in advance the proposed method and analytic protocol, virtually guaranteeing acceptance of the paper, no matter what position, if any, the results support. We will go through what problems the format solves, and why it must therefore be approached in a way that is little understood. Common pitfalls are discussed. The workshop thus provides a framework for how to approach Registered Reports for readers, authors, and editors of the format. The workshop will include interactive exercises.

Improving research rigour with Registered Reports

Presenting Author:Zoltan Dienes, University of Sussex, United Kingdom

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Workshops I 3

24 June 2024 14:00 - 15:30

Aula Máster 1

JURE 2024 Workshop

Mixed-Methods Workshop

Keywords: Meta-analysis, Mixed-method Research, Qualitative Methods, Quantitative Methods

Interest group:

The workshop on mixed-methods research in education aims to provide doctoral students and junior researchers with a comprehensive understanding of this versatile approach to inquiry. Mixed-methods research combines qualitative and quantitative methods to offer a more holistic perspective, enriching the depth and breadth of educational research endeavors. Contents will cover: 1. Definition and Philosophical Foundations; 2. Research Questions; 3. Research Designs; 4. Sampling Strategies; 5. Data Analysis; and 6. Data Integration and Meta-Inferences. Through interactive discussions, case studies, and hands-on activities, participants will leave the workshop equipped with the knowledge and skills to design, conduct, and analyze mixed-methods research in the field of education.

Mixed-Methods Workshop

Presenting Author:Andreas Gegenfurtner, University of Augsburg, Germany

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Workshops I 4

24 June 2024 14:00 - 15:30

Aula Máster 2

JURE 2024 Workshop

Scaffolding interculturalism in our schools and classrooms

Keywords: Art Education, Cultural Diversity in School, E-learning / Online Learning, Multicultural Education

Interest group:

In an increasingly interconnected world, fostering intercultural understanding and competence is paramount in educational settings. This workshop seeks to equip educators with both theoretical insights and practical tools to effectively cultivate intercultural awareness and competence among students.

The workshop starts with the theoretical underpinnings of interculturalism, examining key concepts such as cultural diversity, identity, and the dynamics of intercultural communication. Participants will explore the importance of acknowledging and embracing cultural differences within educational contexts, recognising them as opportunities for enriching learning experiences rather than barriers. Moving beyond theory, the workshop introduces a range of creative and innovative methodological tools designed to scaffold interculturalism in the classroom. Art-based methodologies offer a unique avenue for expression and reflection, enabling students to explore their own cultural backgrounds and perspectives while appreciating those of others. Through mediums such as visual arts, music, and drama, participants will learn how to leverage artistic practices to facilitate meaningful intercultural dialogue and understanding. Storytelling emerges as another powerful tool in the educator's toolkit, allowing for the sharing of personal narratives and cultural diversities. By harnessing the power of storytelling, educators can create inclusive learning environments where diverse voices are heard and valued, fostering empathy and connection among students from different cultural backgrounds.

Additionally, the workshop explores the potential of virtual communities of learning and practice as platforms for intercultural exchange. Through online forums, collaborative projects, and cross-cultural partnerships, educators can facilitate virtual encounters that transcend geographical boundaries, enabling students to engage with peers from diverse cultural backgrounds in meaningful dialogue and collaborative learning experiences.

By integrating theory with practical strategies, this workshop equips educators with the knowledge and tools needed to foster intercultural competence and create inclusive learning environments where all students feel respected, valued, and empowered to engage with the complexities of our diverse world.

Scaffolding interculturalism in our schools and classrooms

Presenting Author:Christina Hajisoteriou, University of Nicosia, Cyprus

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Session B 1

24 June 2024 16:00 - 17:30

Aula 1

Single Paper

Motivational, Social and Affective Processes, Teaching and Teacher Education

Teaching Practices and Support for Self-regulated Learning

Keywords: Eye Tracking, Interest, Motivation, Primary Education, Secondary Education, Self-regulated Learning and Behaviour, Teacher Efficacy, Teaching / Instructional Strategies, Writing / Literacy

Interest group: SIG 11 - Teaching and Teacher Education, SIG 12 - Writing, SIG 16 - Metacognition and Self-Regulated Learning

Chairperson: Venance Timothy, United Republic of Tanzania

Exploring teacher professional vision for student self-regulated learning support in the classroom

Keywords: Eye Tracking, Secondary Education, Self-regulated Learning and Behaviour, Teaching / Instructional Strategies

Presenting Author: Kateryna Horlenko, Vytautas Magnus University, Lithuania; **Co-Author:** Lina Kaminskienė, Vytautas Magnus University, Lithuania

The aim of the study was to gain understanding of teacher professional vision in the process of observing and supporting students as self-regulated learners directly in the classroom. The study focused on how teachers distributed visual attention between students with higher and lower self-regulated learning ratings, and how teachers reasoned about own attention and supporting students in the classroom. Ten secondary school teachers and their students (N=158) took part in the study. Teachers taught one lesson wearing a mobile eye tracker, then commented on own attention and actions in the lesson, and additionally provided ratings of their students' usual self-regulated learning behaviours. The quantitative cluster analyses of teacher visual attention distribution between students showed that one group of higher-regulated students received significantly more visual attention comparing to another higher-regulated group and one lower-regulated group. The qualitative analyses of teachers' utterances from retrospective recall sessions revealed teachers' focus on connecting own actions to student learning, and to a lesser extent to interpreting individual student responses. The results highlight the need for further development of teacher professional vision for self-regulated learning for in-service teachers.

Optimizing the teaching process: Homework and self-regulation learning of students

Keywords: Primary Education, Self-regulated Learning and Behaviour, Teacher Efficacy, Teaching / Instructional Strategies

Presenting Author: Tania Veites, Universidad Complutense de Madrid, Spain; **Co-Author:** Rocío González-Suárez, Universidad de La Coruña, Spain; **Co-Author:** Fátima Díaz Freire, University of A Coruña, Spain; **Co-Author:** Susana Rodríguez, University of A Coruña, Spain

In a dynamic and challenging world, optimizing the learning process is the key to developing the most autonomous students possible. For this purpose, it is essential to promote an improvement in self-regulated learning of homework in the final years of primary education. For a robust approach to assigning homework, the MITCA Homework Implementation Method (Valle & Rodríguez, 2020) has been developed. To evaluate the effectiveness of this method, a research with a quasi-experimental design, a control group, and pre and post-measures. The effectiveness of the homework prescription method is estimated with the participation of a total of 43 teachers and 964 students in the 5th and 6th grades of Primary Education from 20 different schools in the Autonomous Community of Galicia, Spain. The results show differences between the students who participated in the implementation of MITCA and the students in the control group, not only in terms of their involvement in homework but also in their learning self-regulation. The discussion and conclusions shed light on the object of study and allow us to support the efficacy of the MITCA method as an educational resource. This work sets out future lines of research on the topic of homework; and its immediate educational implications for the prescription of quality homework.

Re-examining SRL writing: exploring the nexus of motivation, revised SRL strategies and performance

Keywords: Interest, Motivation, Self-regulated Learning and Behaviour, Writing / Literacy

Presenting Author: Xiaoqi Jin, Zhejiang University, China; **Co-Author:** Jing Wang, Zhejiang University, China

[Background] Under the context of SRL writing, recent attention has turned to adding reading-to-write into cognitive writing process model since the skills and strategies used in reading can significantly influence the writing process. However, empirical research from this integrated perspective to explore the motivation-strategy relationship has been relatively sparse and dominated by variable-centered approach. [Aim] The present research examines the effects of motivational beliefs on revised self-regulated writing (RSRW) strategy use and writing performance, as well as identify RSRW strategy profiles. [Sample] Participants were Chinese secondary school students (N =574) in the 8th grade. [Methods] MANOVAs were conducted to compare high, average, and low-achieving writers in their reported levels of motivational beliefs and RSRW strategy use. SEM was applied to analyze the impacts of specific motivational component on RSRW strategies. LPA was run to identify strategy profiles and another MANOVA was performed to examine whether the high, average, and low profile writers differed in the level of RSRW strategy use. [Results] EFL writers at different performance levels differed significantly in their motivational beliefs and RSRW strategy use. Motivational beliefs positively and differentially predicted RSRW strategy use. Writing interest was relatively more strongly related to RSRW strategy than other two elements, although students generally had a low level of writing interest. Three distinct profiles emerged (low, average, high profile). Students in the high profile are more likely to use extensive RSRW strategies than their counterparts in the average and low profile. [Conclusions] This study emphasizes the more important role of writing interest and self-efficacy compared with perceived utility in Chinese secondary EFL learner's SRL writing strategy orchestration during the whole writing process. Findings may contribute to a better understanding of the sophisticated motivation-writing strategy interaction and provide pedagogical implications for boosting motivation and explicit strategy instruction.

Session B 2

24 June 2024 16:00 - 17:30

Aula 4

Single Paper

Learning and Social Interaction, Teaching and Teacher Education

The Impact of Communication Skills on Motivation and Performance

Keywords: Action Research, Artificial Intelligence, Communication Skills, Doctoral Education, Engagement, Game-based Learning, Motivation, Teacher Effectiveness, Teaching / Instructional Strategies

Interest group: SIG 04 - Higher Education, SIG 11 - Teaching and Teacher Education, SIG 28 - Play, Learning and Development

Chairperson: Martina Lattanzi, Italy

Engaging messages, students' motivation to learn and performance: The role of emotional intensity

Keywords: Artificial Intelligence, Communication Skills, Engagement, Teaching / Instructional Strategies

Presenting Author: Samuel Falcon, University of Las Palmas de Gran Canaria, Canary Islands; **Co-Author:** Jesús Alonso, University of Las Palmas de Gran Canaria, Spain; **Co-Author:** Jaime Leon, University of Las Palmas de Gran Canaria, Spain

This study examined how the emotional intensity of teachers' engaging messages affects the relations between these messages, students' motivation to learn, and academic performance. Specifically, we tested a moderated mediation model examining whether emotional intensity moderates both the direct relation between engaging messages and academic performance, as well as the indirect relation mediated through students' motivation to learn. Teachers' engaging messages were audio recorded during lessons and categorized based on their frame (gain or loss) and type of motivational appeal (extrinsic, introjected, identified, intrinsic). Emotional intensity scores were generated for message audio clips using an artificial intelligence model. Student motivation was assessed via questionnaires and academic performance through official records. Moderated mediation modelling revealed that emotional intensity moderates the direct effect of engaging messages on academic performance. For most message types, as intensity increased, the effect diminished or even reversed, suggesting

high intensity undermines message effectiveness. No indirect effects via motivation were found, contrasting with previous studies using student-reported data. This study provides initial evidence that acoustic features like emotional intensity play a moderating role in teacher message effects. Findings suggest that intensity levels influence student attention and receptiveness to messages. The lack of indirect effects highlights the need for multi-method assessments. Overall, the results indicate acoustic factors should be considered regarding teachers' verbal behaviours and suggest moderating intensity may optimize engaging message impacts. This contributes new insights into the mechanisms influencing teacher-student communication effectiveness

Encouraging target language use and linguistic risk-taking during short-term-residence-abroad.

Keywords: Action Research, Communication Skills, Game-based Learning, Motivation

Presenting Author: Sebastian Windisch, University of Santiago de Compostela + Universität Wien, Spain

This paper analyzes the development of a task catalog aimed at enhancing students' communicative competence during short-term study abroad and language tourism, following the guidelines of the Council of Europe (2001, 2020). Additionally, it presents results from two research cycles, in which students report on their experiences and the application of the catalog during their journey. The implementation of the task catalog aims to provide learners with increased opportunities for communicative learning in the target country and to enhance their active use of the language. The objective is to sharpen awareness of language use in authentic contexts and to boost students' willingness to communicate. The design of the task catalog is based on the communicative competencies of the Common European Framework of Reference for Languages (CEFR) and incorporates elements of the University of Ottawa's didactic-pedagogical Linguistic Risk-Taking Initiative. Furthermore, concepts of 'Gamification' and 'Willingness to Communicate' are integrated into its design.

The Role and Types of Communication in PhD-Students-Supervisor Interactions: A Systematic Review

Keywords: Communication Skills, Doctoral Education, Teacher Effectiveness, Teaching / Instructional Strategies

Presenting Author: Danila Pavliuk, Higher School of Economics (HSE), Russian Federation

Communication plays a vital role in the doctoral education process, particularly in the interactions between PhD-students and their supervisors. Understanding the different communication patterns and their impact on this relationship is crucial for fostering effective mentorship and ensuring the successful completion of doctoral programs. This systematic review aims to assess the existing literature on the role and types of communication patterns observed in doctoral student-supervisor interactions. Following the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) guidelines, a comprehensive search was conducted across multiple electronic databases. Primary research studies published between 2000 and 2023 were included if they investigated communication patterns between doctoral students and supervisors. Relevant papers were screened, and assessed for eligibility, and data were extracted to identify key themes and findings. A total of 43 studies met the inclusion criteria and were included in the review. The findings revealed four primary communication patterns observed in doctoral students-supervisor interactions: (1) Directive communication, characterized by hierarchical and authoritative communication styles; (2) Collaborative communication, emphasizing mutual respect, active listening, and open dialogue; (3) Supportive communication, involving emotional support, encouragement, and empathy; and (4) Disengaged communication, marked by minimal interaction and lack of support. The study highlights the significance of effective communication patterns in shaping the doctoral journey. Collaborative and supportive communication were consistently associated with positive outcomes, including increased student satisfaction, improved academic performance, and higher completion rates. Conversely, directive and disengaged communication patterns were linked to negative experiences, such as decreased student motivation, conflicts, and attrition. By recognizing and promoting collaborative and supportive communication patterns, institutions and stakeholders can enhance the mentorship experience and contribute to the overall success of doctoral education. Based on the findings, recommendations for future research and practical implications for improving communication in these interactions are discussed.

Session B 3

24 June 2024 16:00 - 17:30

Aula 14

Single Paper

Motivational, Social and Affective Processes, Teaching and Teacher Education

Teachers' Wellbeing

Keywords: Anxiety and Stress, Educational Challenges, Educational Technologies, Emotion and Affect, In-service Teachers, Pre-service Teachers, Psychology, Qualitative Methods, Teacher Professional Development, Well-being

Interest group: SIG 08 - Motivation and Emotion

Chairperson: Özün Keskin, University of Augsburg, Germany

Emotions experienced by lateral entry teachers and their influence on their intention to quit

Keywords: Anxiety and Stress, Educational Challenges, Emotion and Affect, Well-being

Presenting Author: Natalia Molina Otero, University of Zurich, Switzerland; **Co-Author:** Silja Rohr Mentele, University of Zurich, Switzerland; **Co-Author:** Sarah Forster-Heinzer, University of Teacher Education Lucerne, Switzerland; **Co-Author:** Doreen Flick-Holtsch, University of Zurich, Switzerland

Perceived emotions from teachers entering the profession through lateral pathways play an important role on their intention to stay in the profession. Emotions impact teachers' well-being, which is linked to their intention to quit. However, little research has been done concerning the emotions experienced by lateral entry teachers and its relations to their emotional exhaustion and intention to quit the profession. Since emotions are relevant for decisions as to quit a profession, and lateral entry teachers are more likely to leave the profession during their first years, it is important to understand the emotions experienced by lateral entry teachers during their first year on the lateral-entry program. Therefore, the present study aims to investigate the emotions experienced by lateral entry teachers during their first year, and its relations to their emotional exhaustion and their intention to quit. This longitudinal study employs three measurement points, two are completed. An online questionnaire is implemented at all measurement points where teachers enrolled at an Austrian lateral entry program are asked about (i) their *experience of four emotions* (joy, pride, anger, anxiety), (ii) their *intention to quit the program* and (iii) their satisfaction with the *decision to start the program*, and from the second measurement point on (IV) their *emotional exhaustion*. Results show that at the beginning of the program (b) participants (N=179) felt proud ($M=4.14$, $SD=1.13$) and joyful ($M=3.77$, $SD=1.06$), while they experienced little anger ($M=2.73$, $SD=1.33$) and anxiety ($M=2.74$, $SD=1.16$). Joy and pride correlate negatively with their *intention to quit the program* (joy: $r=-.39$ p

A methodology to understand the dynamic of teacher's well-being with digital technologies

Keywords: Educational Technologies, In-service Teachers, Qualitative Methods, Well-being

Presenting Author: Cécile Vassaux, UNIGE, Switzerland; **Co-Author:** Gaëlle Molinari, TECFA, Université de Genève, Switzerland; **Co-Author:** Joris Felder, Haute école pédagogique de Fribourg, Switzerland

In an increasingly digitalised environment in upper-secondary school, teachers face several changes which can be perceived either as an opportunity or as a threat. While there is an increasing attention on teacher' well-being and teachers' use of technologies, we still know little about the experience of teachers' well-being dynamic with digital technologies. The objective of this study is to get a better understanding of teachers' well-being dynamic in their interaction with digital teaching and learning environment. An inductive qualitative method was applied, and a methodological innovation was elaborated, combining the technique of critical incidents and the description of the teaching, and learning environment. For the data collection, semi-directed interviews were conducted with 20 teachers in upper-secondary schools. For this contribution, five case studies were conducted based on these interviews. A categorical analysis was used to develop a system of mixed categories both deduced from the theoretical framework and induced by the teachers' experiences. The results enable to identify the components of teachers' well-being dynamic with digital technologies. The increase in well-being is characterised by positive emotions such as proud, amusement, satisfaction. The decrease of well-being is portrayed by frustration, stress, helplessness due to loss of control. Understanding the dynamic of teachers' well-being with digital technologies is important to enhance teachers' occupational conditions and well-being within the digital transformation of

education.

Fostering self-regulation and motivational beliefs in student teachers during long-term internships

Keywords: Pre-service Teachers, Psychology, Teacher Professional Development, Well-being

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

This study examines the impact of an intervention designed to enhance the self-regulation skills and occupational well-being of student teachers during their long-term internship. Teachers are at high risk of developing burnout, highlighting the need for targeted interventions. Long-term internships, usually at the end of studies, provide a valuable context for the development of health-related skills and prepare students for the real challenges of teaching. However, these extended internship periods have rarely been used for interventions in this domain.

Based on the job-demand-resources model (Bakker & Demerouti, 2007), the present study aims first to identify the coping strategies of pre-service teachers at the beginning of their long-term internship and how these already relate to occupational well-being. Subsequently, a newly designed intervention will be implemented online and face-to-face. The intervention is based on Baumert and Kunter's (2006) competency model and aims to increase self-awareness, self-efficacy, and problem-solving strategies. Approximately 200 Masters students will participate in a quasi-experimental design comparing three groups. The intervention will take place online and face to face alongside the long-term internship at the University of Lüneburg in 2024. Using pre-, post- and intermediate measures it is hypothesized that students have inadequate coping strategies at the beginning of their internship, which can be fostered with the developed intervention. Both interventions groups (online and face to face) will score higher on measures of satisfaction, health, self-efficacy, competence reflection, and self-regulation strategies and lower on measures of strain and demands.

Results to analyse the effectiveness of the programme will be available for presentation at the JURE conference in February and June 2024. This study will help us to understand which coping strategies of student teachers should be targeted during student teaching, and whether an intervention during the long-term internship is effective and should be incorporated into future teacher study programmes.

Session B 4

24 June 2024 16:00 - 17:30

Aula Máster 1

Single Paper

Assessment and Evaluation, Motivational, Social and Affective Processes

Classroom Interventions and Assessment

Keywords: Classroom Assessment, Experimental Studies, Feedback, Large-scale Assessment, Motivation, Reading, Secondary Education, Self-concept, Vocational Education and Apprenticeship Training, Writing / Literacy

Interest group: SIG 01 - Assessment and Evaluation, SIG 08 - Motivation and Emotion

Chairperson: Farhad Razeghpour, Ruhr-University Bochum, Germany

Formative assessment for enhancing students' text comprehension abilities: an experiment in Italy

Keywords: Classroom Assessment, Experimental Studies, Reading, Secondary Education

Presenting Author: Elisa Guasconi, University of Bologna, Italy

Formative assessment (FA) has been widely investigated over the last years and as a result, several definitions and practices have been provided. Those practices have been studied extensively for their impact on student achievement, with some finding a positive trend (Hattie, 2009) and others showing a variance in the results (McMillan et al., 2013). Although FA is valued by the experts, in Italy research on the impact of a unitary set of FA strategies on students' learning is lacking. Therefore, this experiment aimed to explore the effects of implementing these practices in classrooms on students' text comprehension abilities. To pursue this goal, two phases were carried out: two quasi-experiments for defining the independent variable and for exploring tendencies and a subsequent two-group experiment. All the plans involved students from first-year classrooms of a lower secondary school in Italy, who were randomly assigned to the experimental and control groups (EG and CG). Each experimental plan followed the subsequent steps: the initial administration of a task on text comprehension abilities, the development of FA moments (14-15) with students of the experimental groups, and, in the end, the repetition of the measurement of the students' abilities. Due to the small number of cases, non-parametric tests were run to analyze the significance of the pre-post-test difference. Results from the exploratory phase and the experiment revealed a higher gain for students of the experimental groups compared to the control groups' students (two quasi-experiments: EG + 1.8 – 1.9 points and CG + 0.6 – 0.8; experiment: EG + 1.3 points and CG + 1), even if this increase is not statistically significant. Analyses reflect the limits of the project, among which the small number of students appears as one of the most relevant, but the research contributes to opening the debate around FA practices in Italy.

Exploring Students' Receptivity to Feedback: A Latent Profile Analysis

Keywords: Classroom Assessment, Feedback, Large-scale Assessment, Writing / Literacy

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

Receiving feedback is a process where the learner makes sense of performance-relevant information to promote their learning. Although feedback research is a highly productive field, a comprehensive understanding of why feedback might benefit some students and not others is still lacking. Based on the MISCA model we performed latent profile analysis on students' receptivity to instructional feedback (RIF) on a dataset of 1800 secondary school students (*Mage* = 16.37; 42.8% females, 36.2% males, 4.4% other). We characterized RIF profiles, predicted profile membership using established factors (cognitive ability, personality traits, prior achievement, age, and gender) that relate to feedback reception, and examined how profile membership influenced revision performance in writing. We identified three profiles distinguished by behavioral, and cognitive engagement with feedback, experiential, and instrumental attitudes towards feedback, and overall receptivity to feedback: *intransigents*, *empty promisers*, and *enthusiasts*. The least successful group was associated with a higher probability of having less cognitive ability and being less agreeable and more neurotic. We discuss these findings in light of the added value of taking a person-centered approach as earlier findings from a variable-centered approach suggested that behavioral engagement alone can be sufficient for performance gains. In addition, we discuss how these insights can inform targeted instructional strategies and personalized education interventions to optimize learning outcomes for diverse student populations.

Empowering academic possible selves: An in class-intervention for vocational high school students

Keywords: Motivation, Secondary Education, Self-concept, Vocational Education and Apprenticeship Training

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

Academic possible selves (PSs), which represent future self-representations about education, can have a significant role in school settings by guiding motivation, particularly in more vulnerable contexts during times of uncertainty. Recognizing the challenges faced by students, especially those in vocational high schools, regarding their academic motivation, the present study aimed to (i) explore differences between general and vocational high school students according to academic PSs along with a number of variables that have been acknowledged as enhancing PSs' motivational strength, and (ii) develop, implement and evaluate a context-related intervention program aiming to empower the academic PSs of adolescents attending vocational high schools. During the first phase of the study, 10th graders (389 attending general and 210 vocational schools) completed self-reported scales measuring PSs and linked strategies, perceived efficacy for attaining PSs, perception of school as-a-path to their future, and difficulty mindsets about academic tasks. Results showed that vocational school students had a more vulnerable motivational profile regarding the most variables under examination. The in-class intervention was an

adaptation of the "School-to Jobs" program (Oyserman et al., 2021), adapted to fit the context. Vocational school students (N = 61) participated in six 60-minute weekly sessions as part of the in-school program. Preliminary analyses of intervention evaluation based on three different measurement points (before, right after, 5 months after the intervention) and between the intervention and control group indicated that vocational students benefited from the intervention in terms of enhancing their efficacy beliefs regarding the attainment of their PSs. These findings have practical implications for educators and psychologists to empower adolescents' academic motivation by supporting them in designing their future.

Session B 5

24 June 2024 16:00 - 17:30

Aula Máster 2

Single Paper

Assessment and Evaluation, Higher Education, Motivational, Social and Affective Processes

Motivation and Self-regulated Learning

Keywords: Educational Technologies, Feedback, Higher Education, Meta-analysis, Metacognition, Motivation, Science and STEM, Secondary Education, Self-determination, Self-regulated Learning and Behaviour

Interest group: SIG 01 - Assessment and Evaluation, SIG 08 - Motivation and Emotion

Chairperson: Ana Lucia Urra Echeverria, Spain

Autonomy-supportive teaching, non-academic ICTs, and student motivation in English-language learning

Keywords: Educational Technologies, Motivation, Secondary Education, Self-determination

Presenting Author: Joy Muth, University of Vienna, Austria; **Co-Author:** Marko Lüftenegger, University of Vienna, Austria

During puberty, children experience an increased need for autonomy in all areas of their lives, including school. However, teachers use different levels of autonomy-supportive teaching strategies, which - building on self-determination theory - might have detrimental effects on students' perceived competence and - motivation to learn. In this pre-registered study, we investigated whether students could buffer a negative impact of little perceived autonomy support in the English-language classroom on their perceived competence and, consequently, two motivational outcomes (grade aspirations, intrinsic motivation) by using non-academic English-language ICTs in their free time. We calculated several (moderated) mediation models with a Bayesian estimator, using data from N = 1288 Austrian secondary school students who answered three online questionnaires between May 2022 and April 2023. Results showed that perceived competence predicts both types of motivation and is influenced by students' use of non-academic English-language ICTs. However, the effects of autonomy-supportive teaching strategies depend on which variables are included in the models. Our study therefore highlights the importance of examining several aspects of autonomy-supportive teaching and including variables from outside school to represent the complex environment in which students' motivation is shaped.

Empowering The Underdogs: A Meta-Analysis of Feedback Effects on Self-Assessment Accuracy

Keywords: Feedback, Meta-analysis, Metacognition, Self-regulated Learning and Behaviour

Presenting Author: Lucas Liebenow, Leibniz Institute for Science and Mathematics Education (IPN), Germany; **Co-Author:** Fabian Schmidt, University of Hildesheim, Germany; **Co-Author:** Jennifer Meyer, Leibniz Institute for Science and Mathematics Education (IPN), Germany; **Co-Author:** Johanna Fleckenstein, University of Hildesheim, Germany

The pivotal role of self-assessment accuracy for academic performance and life-long learning prompted calls for effective interventions. One promising intervention is providing feedback. Despite the extensive research over the last three decades, there is a significant lack of research that investigates the overall potential of feedback on students' self-assessment accuracy. To address this research desiderate, we conducted a systematic review and a three-level meta-analysis with random effects to quantify the overall feedback effect. A total of 213 effect sizes involving 6,191 participants from 49 studies were included in the analysis. We found a significant overall effect ($g = 0.34$), indicating a positive effect of feedback on self-assessment accuracy. Furthermore, this effect was significantly moderated by feedback type and students' performance level. Surprisingly, not the most information-dense feedback leads to the highest rewards for accuracy. In addition, low-performers improved their self-assessment accuracy more than high-performers. As a practical implication, we conclude that providing feedback is always valuable in terms of supporting self-assessment accuracy, especially for those who need it the most.

Promoting study motivation and time management: A digital prevention program for STEM-students

Keywords: Higher Education, Motivation, Science and STEM, Self-regulated Learning and Behaviour

Presenting Author: Lena Sofie Kegel, University of Münster, Germany; **Presenting Author:** Anne Scheunemann, Ruhr-University Bochum, Germany; **Co-Author:** Sophie von der Mülbe, University of Augsburg, Germany; **Co-Author:** Jens Fleischer, Ruhr-University Bochum, Germany; **Co-Author:** Markus Dresel, University of Augsburg, Germany; **Co-Author:** Stefan Fries, University of Bielefeld, Germany; **Co-Author:** Detlev Leutner, University of Duisburg-Essen, Germany; **Co-Author:** Joachim Wirth, Ruhr-University Bochum, Germany; **Co-Author:** Carola Grunschel, University of Münster, Germany

Motivational deficits and difficulties in time management can lead to unfavorable study behavior and lower academic success. Especially STEM-students who typically have high dropout rates and report motivational problems could benefit from participating in prevention programs. The aim of the present research is to evaluate a newly developed prevention program targeting key predictors of academic success. As one of the first programs, it integrates and promotes multiple helpful strategies to promote study motivation, motivational and emotion regulation, and time management. We evaluated the prevention program ($N = 57$) with a pre-post design in comparison to a waiting control group ($N = 202$). All participants were recruited from STEM study programs at different universities. Implemented as a digital program on the learning platforms of the participating universities, the program consisted of nine weekly sessions that lasted 30 minutes. We examined whether the intervention group, compared to the waiting control group, experienced favorable changes in study motivation, the use of motivational and emotion regulation strategies, time management strategies, procrastination, and academic success indicators (study satisfaction, dropout intentions). Our findings support the effectiveness of the prevention program. We found favorable changes for the intervention group in terms of expectancy, effort costs, ability-focus self-talk, emotion regulation strategies, perceived time control, procrastination, and study satisfaction. To examine long-term effects of the prevention program we currently implement follow-up surveys and plan to include these additional analyses in our presentation.

Session B 6

24 June 2024 16:00 - 17:30

Aula 11

Poster Presentation

Culture, Morality, Religion and Education, Higher Education, Learning and Social Interaction, Teaching and Teacher Education

Diversity and Equity in Schools

Keywords: Action Research, At-risk Students, Attitudes and Beliefs, Competencies, Cultural Diversity in School, Developmental Processes, Early Childhood Education, Educational Challenges, Foreign and Second Language Acquisition, Higher Education, L1 / Standard Language Acquisition, Migrant / Refugee and Minority students, Mixed-method Research, Parents' Beliefs and Affect, Quantitative Methods, Science and STEM, Secondary Education, Social Interaction, Social media, Survey Research

Interest group: SIG 10 - Social Interaction in Learning and Instruction, SIG 13 - Moral and Democratic Education, SIG 21 - Learning and Teaching in Culturally Diverse Settings

Chairperson: Niina Putkonen, University of Helsinki, Finland

Socially Sensitive Topics in the Classroom: What Value Narratives are Teachers Subject to?

Keywords: Cultural Diversity in School, Mixed-method Research, Parents' Beliefs and Affect, Social media

Presenting Author:Marius Bytautas, Vytautas Magnus University, Lithuania; **Co-Author:**Sigitas Daukilas, Vytautas Magnus University, Lithuania

Teachers who work with socially sensitive curriculum are constantly subject to value-based content presented by influencers and parents of school-age children. The socio-cultural tensions are most evident with sexuality-related topics. Therefore, the research questions are posed: what is the content of the value narratives in the field of sexuality presented to the public by influencers and parents of school-age children? what is the motivational environment for teachers delivering sexuality education? what are the possible principles of communication between teachers, organisations involved in sexuality education, and parents? The empirical research data were collected using a mixed methods strategy. The methodological and value differences between the institutions providing sexuality education in Lithuania were found to be insignificant, nevertheless, there are significant differences in the value narratives between the concepts of 'sexuality education' and 'sex education' in the public sphere. Parents of school-age children are exposed to fragmented, value-indoctrinated sexuality education content presented by influencers, leading to social tensions in school communities regarding children's sexuality education. The analysis of the narratives of influencers and parents on the topic of sexuality education shows that the constructive participation of interested groups (educators, parents, social organisations) in the policy of sexuality education is impossible without the principles of critical analysis, awareness of conflicts, and social dialogue.

Investigating interaction patterns in secondary education classes with recent migrant students

Keywords: Educational Challenges, Migrant / Refugee and Minority students, Secondary Education, Social Interaction

Presenting Author:Shauney Seynhaeve, Ghent University, Belgium

Traditionally, classroom interaction is seen as an important aspect of learning, as it facilitates second language acquisition (Tsui, 1985) and subject learning (Lo & Macaro, 2012). Thus, in specific contexts, such as the context of Newly Arrived Migrant Students (NAMS), classroom interaction holds a lot of potential. Namely, earlier research has shown that NAMS are less prone to academic achievements (Lüdemann & Schwerdt, 2013), which is often attributed to a lack of proficiency in the language of instruction (OECD, 2018). While classroom interaction can potentially support vulnerable learners in their learning process, there is a lack of research on the interactional practices in which NAMS are involved in secondary education. This study investigates learner-teacher interaction in secondary education classes. At three Flemish secondary schools, nine teachers were observed during 38 hours, during which NAMS were always present. These lessons were transcribed verbatim in ELAN, after which the learner-teacher interactions were analysed using four parameters based on An et al. (2021): (1) time percentage of learner and teacher talk, (2) turn taking behaviour between learners and teachers, (3) frequency of Initiation-Response-Feedback-sequences, and (4) length and frequency of teacher monologues. Early findings indicate that the teacher exerted significant dominance over the interactions within the classroom. Moreover, there were few opportunities for NAMS to take part in these interactions.

Exploring secondary school teachers' attitudes and practices: A survey on diversity and equity

Keywords: Attitudes and Beliefs, Educational Challenges, Secondary Education, Survey Research

Presenting Author:Katrien Hermans, Hasselt University, Belgium; **Co-Author:**Elke Emmers, Universiteit Hasselt, Belgium; **Co-Author:**Patrizia Zanoni, University of Hasselt, Belgium; **Co-Author:**Katrien Struyven, Hasselt University - UHasselt, Belgium

As society continues to diversify, education—considered the building block of society—also encounters a continuous increase in the diversity of student populations (OECD, 2018; Siongers et al., 2020). As student diversity grows, so do educational inequalities, particularly in academic performance. Background characteristics like origin, gender, and disability status significantly impact students' success (Cochran-Smith et al., 2016). Moreover, teacher attitudes, perceptions, and expectations also play a crucial role in influencing student outcomes (Turetsky et al., 2021). The current study aims to contribute to our understanding of the influencing factors of equal educational opportunities at the micro-level. Specifically, we focus on exploring the attitudes, beliefs, opinions and daily classroom practices of teachers regarding equal educational opportunities.

A quantitative study was conducted in which an online survey was sent out to 115 secondary schools in Limburg, Flanders (Belgium). The preliminary results provide insight into various factors influencing equal educational opportunities in secondary education. Additionally, an understanding is gained regarding how teachers, in their daily practices, promote equal educational opportunities and assess their own success in this aspect. These findings can identify effective components and also provide starting points to enhance teachers' skills, knowledge and competences in fostering equal educational opportunities for all students.

Exploring the use of cultural diversity in challenge-based learning contexts

Keywords: Competencies, Cultural Diversity in School, Higher Education, Science and STEM

Presenting Author:Cassandra Tho, Wageningen University & Research, Netherlands; **Co-Author:**Yvette Baggen, Wageningen University & Research, Netherlands; **Co-Author:**Judith Gulikers, Wageningen University & Research, Netherlands; **Co-Author:**Perry den Brok, Wageningen University & Research, Netherlands

In recent years, challenge-based learning (CBL) as an educational concept has been gaining much traction. Many higher education institutions in the Netherlands are implementing CBL as a way to develop in students the skills and competencies to deal with grand societal challenges (GSCs), for example, in finding equitable and sustainable solutions for climate change, international water resource challenges etc. Given the complex nature of GSCs, a transdisciplinary way of working is required; a collaborative and concerted effort with multiple stakeholders across disciplines, practices, organizations, and levels in society is necessary. With multiple different stakeholders involved, everyone brings to the table their own cultural practices, values, assumptions, views and knowledge about the issue at hand; everyone will have different views on how the GSC can be approached and understood, what the scope of the GSC should be, the impact it might have as well as their own views on what kind of resources should be allocated towards resolving the challenge. Additionally, these stakeholders with different cultural backgrounds are also used to different ways of collaboration. In order to be able to work with this value-laden character of GSCs, the cultural diversity present must be acknowledged and utilised. Those involved in discussions must engage in boundary crossing and possess some intercultural sensitivity to be able to approach the culturally diverse matters and one another with humility and openness. CBL contexts therefore presents an important learning opportunity for students to learn how to recognise, seek, appreciate and utilise the cultural diversity that is present, and in the process, also develop their intercultural sensitivity and competence. This study aims to map and understand the perceptions of students and teachers with regards to the use of cultural diversity in CBL settings and interpret these perceptions from a new theoretical framework, such as boundary crossing.

Fostering academic language in the multilingual classroom through extensive listening

Keywords: Action Research, Foreign and Second Language Acquisition, L1 / Standard Language Acquisition, Secondary Education

Presenting Author:Isabel Zins, University of Vienna, Austria

The research aims to foster and investigate academic language development in German and another language among students within the framework of action research in a secondary school setting, utilizing the method of extensive listening. Over the period from February to June 2024, students from four classes in a vocational secondary school in Vienna listen to approximately one hour of podcasts, audio contributions, etc., per week. Subsequently, they write a Listening Log reflecting on their experience. The Listening Log serves as a kind of audio diary, to be written in both German and another language. This approach aims to explore the possibility of developing two languages simultaneously. At the beginning and end of the study, participants fill out a self-assessment questionnaire regarding their language skills and the progress of the project. Additionally, a linguistic analysis is conducted on an entry in the Listening Log from the beginning and end of the study (pre- and post-test) to examine linguistic advancements. The concept is continuously refined through ongoing collaboration with participants/students and colleagues (peer feedback), as it is an action research project.

The reality of educating preschool children from disadvantaged backgrounds

Keywords: At-risk Students, Developmental Processes, Early Childhood Education, Quantitative Methods

Presenting Author:Sonata Lazauninkiene, Vytautas Magnus University, Lithuania

High-quality preschool and pre-primary education has a positive impact on a child's development, especially for children from disadvantaged socio-economic and cultural backgrounds, and helps them to develop their social-emotional competencies and cognitive skills. Early childhood education contributes to reducing poverty and dropout.

A growing body of neuroscientific research suggests that the hypothesis that chronic stressors are associated with poverty-related outcomes is valid (Blair and

Raver, 2012, McEwen and Gianaros, 2010). Children with poorer executive functions and who have more difficulty controlling their behavior and emotions are at significantly higher risk of experiencing difficulties in learning contexts (Brock et al., 2009; Li-Grining et al., 2010; Raver, 2002). Children from poor backgrounds are less well-prepared for school, both academically and in terms of self-regulation (Crosnoe, 2007). Thus, the problematic question is: what should be the educational provision for children from disadvantaged socio-economic and cultural (SEC) backgrounds to enable their optimal development? From 1 September 2021, children at social risk in Lithuania may be eligible for compulsory preschool education to create the right conditions for their development and education. The aim of this report is therefore to explore the reality of preschool education for children from disadvantaged socio-economic and cultural backgrounds in Lithuania. The research method is a questionnaire survey for teachers working with children from disadvantaged SEC backgrounds. The sample was 150 preschool teachers of 200 children from disadvantaged SEC backgrounds. The survey instrument is based on the main aspects of preschool education: general information about the child (age, gender, individual learning needs, attendance at pre-school), the child's achievements, strengths and challenges, the child's education (curriculum features, whether and how enrichment is provided), educational support (what kind of educational support is provided), and cooperation with parents. The presentation will outline the main results of the ongoing study.

Session B 7

24 June 2024 16:00 - 17:30

Aula 5

Roundtable

Higher Education

Studies in Higher Education

Keywords: Curriculum Development, Higher Education, Inclusive Education, Qualitative Methods, Social Aspects of Learning and Teaching, Social sciences and Humanities

Interest group: SIG 04 - Higher Education, SIG 24 - Researcher Education and Careers

Chairperson: Lisa Hirzler, Pädagogische Hochschule Heidelberg, Germany

Shaping the future? Career perspectives in the humanities

Keywords: Curriculum Development, Higher Education, Qualitative Methods, Social sciences and Humanities

Presenting Author: Kirstine Terese Stoksted, Aarhus University, Denmark

Within the context of curriculum studies and career research this study will seek answers to how the future and competence perspectives are practiced, expressed, and made explicit by the teacher through the teaching. The study will focus on five selected humanities Masters programs. The research question is: *How does the individual teacher interpret and articulate the career opportunities and career competences of a Masters program, and how are those interpretations communicated to the students explicitly and implicitly?* The initial data presented is based on preliminary interviews with teachers from each of the five programs. The analysis of the data will be a semantic analysis of how the teachers articulate their perspective on the student's future. Additional data will rely on observations of the teaching practices within each of the programs as well as follow up interviews after each observation. In everyday language, the concept of career is understood in a job oriented and competitive way, which I was afraid could have a limiting effect on my interview informant's answers to my questions. Therefore, I chose to use the word *future* to broaden the conversation and focus on using the language my informant provided. Therefore, I would like to discuss how to formulate interview questions with language (concepts) that do not limit the conversation but guide it instead. Questions for the roundtable are: What connotations do you have of the word career and what other words could I have used instead of *future*? Have you struggled with words or terminology in your data collection? The use of particular research concepts may produce certain meanings that hinder informants in describing their own world perspectives. How can we become aware of meanings that we ascribe when we use conceptualisations and when we should use everyday language?

Unraveling the Roots of Belonging and Authenticity: A Qualitative Study of Students' Perspectives

Keywords: Higher Education, Inclusive Education, Qualitative Methods, Social Aspects of Learning and Teaching

Presenting Author: Anne-Roos Verbree, University Medical Center Utrecht, Netherlands; **Co-Author:** Leoniek Wijngaards-de Meij, University Utrecht, Netherlands; **Co-Author:** Gönül Dilaver, University Medical Center Utrecht, Netherlands; **Co-Author:** Marieke van der Schaaf, University Medical Center Utrecht / Utrecht University, Netherlands

Students' sense of belonging is important for multiple student outcomes in college, and authenticity seems to play a crucial role as well. The current study aims to achieve a comprehensive understanding of what shapes students' sense of belonging (support from peers and faculty and students' comfort level in the classroom) and authenticity (the extent they can be themselves) from the perspective of students. The research questions are: How do students experience sense of belonging and authenticity at their university and within the classroom? What factors influence students' belonging and authenticity? And what can the university and faculty do to foster these concepts among students? Data were collected through semi-structured in-depth interviews with twenty-one undergraduate students at a Dutch university. Maximum variation sampling was employed which resulted in diversity in terms of gender, disabilities, religion, ethnicity, parental education, and field of study. Reflexive thematic analysis was used to analyze the data. Students had very different experiences, ranging from experiencing a weak to a very strong sense of belonging and/or authenticity. Peer support was perceived as crucial aspect of sense of belonging. Students mentioned many factors that influenced their belonging and authenticity, including, but not limited to, informal contact with fellow students and faculty outside of education, being influenced by fellow students, characteristics of faculty, the type of learning activities, group size, knowing the university buildings, students' personal development, and extracurricular activities. The results of this study can inform faculty and practitioners within higher education institutions how to facilitate students' sense of belonging and authenticity, which are crucial for student achievement and broader functioning in higher education and beyond.

Keynote I 1

25 June 2024 09:30 - 10:30

Salón de Actos

JURE 2024 Keynote

Reading on screens: insights from the lab, the schools and beyond

Keywords: Digital Literacy and Learning, Digitalisation, Educational Challenges, Reading

Interest group:

Chairperson: Pablo Delgado, Spain

The last three decades have witnessed a rapid and evolving process of digitalization of reading, with frequent changes in the digital media (e.g. computers, tablets, ebooks) as well as in the digital services (e.g. hypertext, social media, generative AI) and associated practices (e.g. getting lost in hyperspace, sharing fake news, multitasking). Such fluid scenario possesses a number of challenges for the research on the educational implications of digitalization of reading. Challenges arise at many different levels: conceptual (e.g. what means to be a competent reader in an evolving digital world?), assessment and instruction (e.g. how can an evolving competence be reliably assessed and trained?), developmental (e.g. how digitalization practices affect the development of reading?), educational policy (e.g. how can educational research respond to quick and disrupting technological changes) and even ideological (e.g. as digitalization is here to stay, other forms of reading, such as paper, are really an option?) In this talk I will defend that educational research must orchestrate a research agenda that integrates multiple sources of evidence, and incorporate updating mechanisms to create a research base which is ready to respond to current and future digitalization developments. I will illustrate some of those solutions with research from our labs as well as from others'.

Reading on screens: insights from the lab, the schools and beyond

Presenting Author: Ladislao Salmerón, University of Valencia, Spain

The last three decades have witnessed a rapid and evolving process of digitalization of reading, with frequent changes in the digital media (e.g. computers, tablets, ebooks) as well as in the digital services (e.g. hypertext, social media, generative AI) and associated practices (e.g. getting lost in hyperspace, sharing fake news, multitasking). Such fluid scenario possesses a number of challenges for the research on the educational implications of digitalization of reading. Challenges arise at many different levels: conceptual (e.g. what means to be a competent reader in an evolving digital world?), assessment and instruction (e.g. how can an evolving competence be reliably assessed and trained?), developmental (e.g. how digitalization practices affect the development of reading?), educational policy (e.g. how can educational research respond to quick and disrupting technological changes) and even ideological (e.g. as digitalization is here to stay, other forms of reading, such as paper, are really an option?) In this talk I will defend that educational research must orchestrate a research agenda that integrates multiple sources of evidence, and incorporate updating mechanisms to create a research base which is ready to respond to current and future digitalization developments. I will illustrate some of those solutions with research from our labs as well as from others'.

Session C 1

25 June 2024 11:00 - 12:30

Aula 4

Single Paper

Instructional Design, Lifelong Learning

Challenges and Innovations in Instructional Design

Keywords: Case Studies, Creativity / Divergent Thinking, Developmental Processes, Educational Challenges, Game-based Learning, Instructional Design, Lifelong Learning, Qualitative Methods, Science and STEM

Interest group: SIG 06 - Instructional Design

Chairperson: Federica Picasso, University of Trento (I), Italy

Challenges and needs of corporate technical education and training – a case study

Keywords: Case Studies, Educational Challenges, Instructional Design, Lifelong Learning

Presenting Author: Lisa Marie Wintersberg, Technical University of Munich, Germany; **Co-Author:** Daniel Pittich, Technical University of Munich, Germany

Over the past decade, corporate training and development, especially in technical fields, have undergone significant transformations due to a shortage of skilled engineers or technicians and the COVID-19 pandemic. Research has focused on implementing digital learning, neglecting specific cases of transforming learning environments in the corporate sector. Despite theoretical guidelines for the transformation and models taught in academic programs, practical application diverges considerably. Practitioners prefer proven strategies over theoretical and abstract approaches, shaping workflows based on individual factors and environmental characteristics. Recognizing the gap between theory and practice, we aim to present a case study on facilitating technical education and training in a corporate setting, providing practical value for transforming corporate learning environments. Emphasizing the significance of this case study, sharing expertise or best practices, as typically done in a case study, can lead to increased profit, cost reduction, time savings, and innovative ideas in any context. For this case study, episodic narrative interviews were held with 22 employees of the training and development department of a for-profit company in the manufacturing sector. We investigated their perceptions of the digital transformation of learning. The findings describe the working structures of the case study and elaborate on the challenges and needs of corporate technical education and training transformation. These findings can support the daily work of practitioners in these fields and can further be used as a starting point for the development of theory and academic programs.

Design Thinking in the Compulsory School's Handicraft Education

Keywords: Creativity / Divergent Thinking, Instructional Design, Qualitative Methods, Science and STEM

Presenting Author: Sanna Merikanto-Tolonen, University of Oulu - Faculty of Education and psychology, Finland; **Co-Author:** Jari Laru, University of Oulu, Finland; **Co-Author:** Megumi Iwata, University of Oulu, Finland; **Co-Author:** Kati Mäkitalo, University of Oulu, Finland

Abstract Design Thinking is seen as a learning method which can be applied in different subjects. Previous research shows that design thinking implemented in education enhances various skills, such as creativity, problem solving and team skills. Teachers and their expertise in design education significantly impact the realization of children's creativity. Therefore, we should understand better in what ways design thinking as a method is implemented to promote design processes based on the current studies. This paper provides a descriptive literature review on how design processes have been implemented in handicraft education to promote design thinking and especially creativity. By analyzing the literature, similarities in design processes can be identified, such as the similarity between the creative design process and design thinking, which are also widely used in STEAM education. Based on the review results, the next challenge is to design the instructions to enhance design thinking and creativity in handicraft education, which will be discussed in the JURE conference.

Pension as a learning object: Design, testing and evaluation of a game-based learning environment

Keywords: Developmental Processes, Game-based Learning, Instructional Design, Qualitative Methods

Presenting Author: Merve Suna, University of Mannheim, Germany; **Co-Author:** Ronja Baginski, University of Mannheim, Germany; **Co-Author:** Carmela Aprea, University of Mannheim, Germany

Most societies are facing challenges due to demographic change, such as the future financing difficulties of pension systems (OECD, 2021). As a result, individuals need to take responsibility for their own pension planning (Börsch-Supan et al., 2015). However, this can be a complex and uncertain task that requires a good understanding of pension system rules and incentives to prepare effectively for retirement (Fornero & Lo Prete, 2023). Unfortunately, research shows that young people have limited knowledge in this area (Elinder et al., 2022). Based on these considerations, the research presented in this paper aimed to use a design-based research approach (Armstrong et al. 2019) to develop a learning environment on pension planning and gain insights into how to design learning units to support young adults in their knowledge acquisition. Five design-based research cycles were conducted with reference to game-based learning approaches (Schutz & Schwartz, 2022), in which a learning environment was developed, tested, evaluated, and optimised based on the knowledge gained. Each cycle focused on different aspects of the learning environment. Experts, students, and young adults from different fields participated in testing the learning environment. Data was collected through semi-structured interviews and questionnaires. The result is the "Retirement Rally", which is based on the concept of learning stations. It currently contains seven stations where young adults can learn in a self-organised way. The research cycles have shown, among other things, that caricatures are a good way of stimulating learners' interest in the topic. Furthermore, multimedia can be used to support learners with different media preferences. Moreover, basic economic knowledge should not be taken for granted but should be explained in detail. The study adds knowledge to an under-explored practical issue in educational research. It provides a basis for future research into integrating the "Retirement Rally" into educational or extracurricular contexts.

Session C 2

25 June 2024 11:00 - 12:30

Aula 12

Single Paper

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

Technology-enhanced Learning

Keywords: Competencies, Computer-assisted Learning, Computer-supported Collaborative Learning, Digitalisation, E-learning / Online Learning, Engagement, Experimental Studies, Instructional Design, Meta-analysis, Mixed-method Research, Parental Involvement in Learning, Pre-service Teachers, Self-efficacy, Social Aspects of Learning and Teaching, Video-based Learning

Interest group: SIG 06 - Instructional Design, SIG 07 - Technology-Enhanced Learning And Instruction, SIG 11 - Teaching and Teacher Education

Chairperson: Hülya Aldemir, Spain

Examining the Digital Competence, and Intentions, of Pre-service Teachers to use Digital Technology

Keywords: Competencies, Mixed-method Research, Pre-service Teachers, Self-efficacy

Presenting Author: Denis Moynihan, Dublin City University, Ireland

Digital competence is a key priority of education policy and curriculum documents in the Republic of Ireland (RoI) as evidenced in Initial Teacher Education accreditation standards, curriculum specifications, and national education policy. To achieve these policy mandates our primary school pre-service teachers (PSTs) will play pivotal roles in designing, and facilitating learning activities which integrate technology, and develop the digital competence and skills of future learners. However, it is unclear what level of digital competence PSTs in the RoI possess, and whether they intend to use technology in their professional practice. Addressing a gap in the research literature, this study followed an explanatory sequential design involving: the initial collection of quantitative survey data ($n = 300$), followed by generation of qualitative interview data ($n = 9$). The quantitative survey included: demographics, the Intention to Use Technology-enabled Learning (I-TEL) Scale (Herring Watson and Rockinson-Szapkiw, 2022), and the DigCompEdu self-assessment tool (Caena and Redecker, 2019). The semi-structured qualitative interview schedule was informed by relevant research literature, and data from the quantitative phase. Quantitative data were subject to descriptive and inferential statistical analyses, including correlations and regressions. Interview data were analysed using Fryer's Critical Realist Approach to Thematic Analysis (2022). Quantitative data analysis provides a 'snapshot' of the digital competence and intentions of primary PSTs to use DT. The majority of PSTs (43%) were classified as having an Overall Digital Competence level of 'Explorer (A2)'; the second of six competence levels. The Overall Intention of PSTs to use DT was very high; a median of 6.48 on a seven-point scale. Qualitative analysis provides a deeper understanding of the factors underlying PST intentions and digital competence, with four causal explanations produced. Analysis of data is still underway. The findings of this study will be of relevance to policy makers internationally and in the RoI.

Retrospective Note Prompts Support Learning From Video Tutorials

Keywords: Computer-assisted Learning, E-learning / Online Learning, Experimental Studies, Video-based Learning

Presenting Author: Simon A. Schriek, Bielefeld University, Germany; **Co-Author:** Kirsten Berthold, Bielefeld University, Germany; **Co-Author:** Markus H. Heffer, Bielefeld University, Germany

When trying to learn how to operate an industrial machine, learners regularly rely on video tutorials. Such videos can lay the foundation of internalizing the required working steps for an operation of the machine. However, there is the chance of learners lacking engagement when learning with the tutorials, leading to a passive consumption of learning contents and making deep learning less probable. Prompting instructions to learners is one way to ensure learners' active engagement with the videos. There are still open questions which prompts should be implemented. We conducted an online experiment with 159 subjects (108 female, 42 male) with video tutorials on the topic of "How to operate a lathe", which were combined with different kind of prompts. We compared the following conditions: (A) anticipatory note prompts ($n = 51$), (B) retrospective note prompts ($n = 55$), (C) unfocused note prompts ($n = 53$). Our results show that retrospective note prompts lead to better knowledge about imparted working steps in comparison to anticipatory note prompts and unfocused note prompts. Note quality mediated the effect of prompt type on learning outcomes. Our findings give empirical support for the effectiveness of retrospective note prompts as learning support when learning with video tutorials.

Instructor (para-)social presence in digital learning environment: Why? When? How often?

Keywords: Digitalisation, Engagement, Instructional Design, Social Aspects of Learning and Teaching

Presenting Author: Diana Pak, University of Zurich, Switzerland; **Co-Author:** Juliette Desiron, University of Zürich, Switzerland; **Co-Author:** Sascha Schneider, Institute of Education, University of Zurich, Switzerland

In the rapidly evolving landscape of digital education, the effectiveness of remote learning has been challenged by poor learner engagement and academic performance which are often attributed to the lack of social presence. Multiple studies suggest that on-screen instructors can enhance perceived (para-)social presence, knowledge outcomes, and other learning-related processes. Conversely, the seductive detail effect considers a visible instructor as a potential source of extraneous load constraining cognitive advancement. Grounded in theories from multimedia learning, educational technology, and media studies, this ongoing experimental research project aims to assess and compare how instructor presence in video lectures can influence experiences of parasocial interaction, engagement, extraneous cognitive load, and educational attainment. The data is being collected from 180 high school pupils randomly assigned to one of the four treatment groups (no visible instructor; visible instructor during an explanation phase; visible instructor during an example phase; always visible instructor). The findings of the contrast analyses will be presented at the conference. They are expected to contribute to the emerging body of knowledge of parasocial learning and offer practical recommendations for enhancing student engagement in digital learning environments, informing teacher education practices, and guiding the educational technologies industry.

Teachers' Perspectives of Parent-school Communication Using Technology: A Systematic Review

Keywords: Computer-supported Collaborative Learning, Meta-analysis, Parental Involvement in Learning, Social Aspects of Learning and Teaching

Presenting Author: Suzanne May Shwen Lee, The University of Hong Kong, Hong Kong; **Co-Author:** Lin Gao, The University of Hong Kong, Hong Kong; **Co-Author:** Cheng Yong Tan, The University of Hong Kong, Hong Kong; **Co-Author:** Ariel Qi An, The University of Hong Kong, Hong Kong

Research demonstrated that parent-school communication using technology may be related to parental involvement and student learning outcomes, but research has not understood synthesized teachers' perspectives on naturally occurring parent-school communication using technology, especially whether it is related to parental involvement and student learning outcomes, including during the COVID-19 pandemic. This paper addresses the knowledge gap by presenting a systematic review on teachers' perspectives of naturally occurring parent-school communication using technology with parents of preschool to high-school children (K-12). The review focuses on teachers' perspectives of (1) their preferred use of technology, the benefits, concerns and enablers to using technology in parent-school communication, (2) the outcomes of parent-school communication using technology in terms of parental involvement and student learning, and (3) the parent-school communication using technology during COVID-19. The literature search from articles ever printed until September 2021, from databases and manual searches based on inclusion and exclusion criteria, resulted in 32 included studies. Thematic analysis was used to synthesize the results. This review extended the literature by offering valuable insights on synthesized teachers' perspectives that parent-school communication using technology may be related to parental involvement and student learning outcomes. Key themes were generated which illuminated teachers' views on their preferred use of technology, benefits, concerns, and enablers to using technology. The key themes also elucidated teachers' perspectives that parent-school communication using technology kept parents updated, enhanced parental involvement and parent-school relationship, extended school agenda to homes, increased parents' virtual classroom participation, made students' learning visible, mostly enhanced students' learning, and increased parent-school communication during COVID-19. This finding has important practical implications because teachers are typically the initiators of parent-school partnerships. The synthesized teachers' perspectives in this review can prevent parent-teacher misunderstandings including during pandemics, which may occur due to misalignments in how technology in parent-school communication is used and perceived.

Session C 3

25 June 2024 11:00 - 12:30

Aula 13

Single Paper

Culture, Morality, Religion and Education, Teaching and Teacher Education

Cultural Diversity and Citizenship Education

Keywords: Citizenship Education, Classroom Management, Conflict and War, Cultural Diversity in School, Dialogic Pedagogy, Multicultural Education, Primary Education, Religiosity and Spirituality, Social sciences and Humanities, Teaching / Instructional Strategies

Interest group: SIG 19 - Religions and Worldviews in Education

Chairperson: Marius Bytautas, Vytautas Magnus University, Lithuania

Islamic religious education as a weave with the past, the present and the future

Keywords: Cultural Diversity in School, Dialogic Pedagogy, Primary Education, Religiosity and Spirituality

Presenting Author: Niina Putkonen, University of Helsinki, Finland

In this paper, I discuss Islamic religious education (henceforth IRE) as a place for world-centered education (Biesta 2022). In European studies, IRE is identified as a recognition of Islam and Muslims in the society more broadly, and the school's role in supporting young Muslims' identities has been topical. Context-bound religious knowledge and the decolonization of the religious education curriculum have been recent areas of interest in the field of religious education (henceforth RE) research. This paper focuses on perspectives of what is *educational* in IRE at schools. The research results are based on interviews with IRE teachers (n=17) working in comprehensive schools in the capital region of Finland. The theoretical framework is built on the exploration of the conceptualization of the three domains of educational purpose, *subjectification*, *socialization* and *qualification*, introduced by Gert Biesta (e.g. 2006; 2010; 2013; 2019; 2020; 2022), and discussed with the *world-centered education* (Biesta 2022). The preliminary results of the study show, that the teachers of Islam see IRE as a context for the pupils both for preserving and reforming their perceptions as well as their relation on Islam. IRE forms in the synergy of Islamic tradition, lived religion and the academic goals of school, and offers a place for Muslim pupils to reflect their Muslimness while building their own worldview-related thinking. Furthermore, IRE is a context for the pupils for enhancing civic engagement, social cohesion and belonging. World-centered education invites us to meet the world and to meet ourselves in relation to the world. I debate world-centered approach on education, that in the context of RE requires risk-taking both from the perspective of teaching and learning. Meanwhile it invites to (re)think what is existential in RE. Through this, Islamic religious education appears as a weave with the past, the present and the future.

The multi-narrative history class: students' orientation in time and their diverse social identities

Keywords: Citizenship Education, Multicultural Education, Religiosity and Spirituality, Social sciences and Humanities

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

History is becoming increasingly polarised. Different groups advocate for different narratives of a shared past. These narratives are sometimes difficult to reconcile, contributing to the sensitivity of some historical topics. This diversity in narratives is also present in history classrooms, complicating the discussion of certain topics in schools. Such narratives are studied from various disciplines, including history and religious studies. Insights from both disciplines are seldom combined. This research project uses strategies from spiritual care to explore stories students tell about the shared past. Using newly designed data collection tools, students explicate and explore their narratives about that past. These narratives are analysed qualitatively to characterize and understand the way in which they help students to give meaning to their lives and how they help them orientate themselves in time. The designed methods were applied in a study among 14 students in Dutch secondary education. The data showed limited differences between students' narratives. Most students viewed history as a story of progress in which they recognized similar events and actors as significant. They also justified this significance on the basis of the same core values: freedom and equality. However, some differences can be recognized. Compared to other participants, students with a more explicitly expressed social self-identification acknowledged different historical actors and events as significant for their narrative. Furthermore, they were more inclined to connect the significance of these phenomena as well as their core values with personal experiences. In this regard, their narratives corresponded more clearly to their ultimate concerns, making them seem to have a more personal meaning. Based on these insights it may be suggested that history education that wants to help students, future citizens, discuss sensitive topics, should take differences in meaning of students' narratives of the past, as well as the dynamic between them, into account.

Teachers views on pedagogical challenges during post-war return in Mosul

Keywords: Citizenship Education, Classroom Management, Conflict and War, Teaching / Instructional Strategies

Presenting Author: Ricarda Derler, University of Graz, Austria; **Co-Author:** Heike Wendt, University of Graz, Austria; **Co-Author:** Lubab Zeyad Mahmood, University of Mosul, Iraq

It is argued that education and conflict influence each other and this relationship is considered to be complex and multifaceted. Therefore, education plays an essential role in post-conflict reconstruction (The World Bank, 2005). For example, the Human Development Index shows that almost 60% of countries ranked 'low' on the HDI have experienced conflict since the 1990s. Organizations such as the United Nations address the challenges of (armed) conflict (Smith, 2003). In particular, countries affected by (armed) conflict face enormous challenges (UNESCO, 2011), such as humanitarian risks, infrastructural conditions (Jones & Naylor, 2014), self-sufficiency issues (Sommers, 2002) and forced migration (UNHCR, 2014). But there is little to challenges for teachers (The World Bank, 2005). In literature pedagogical challenges such as, building relationships between students and teachers, classroom management, creating safe spaces, big and consistent groups, dealing with heterogeneity in terms of achievement (Symeonidis et al., 2023), are often mentioned but not explored. In our study we analyze how teachers in Iraq reflected and constructed pedagogical challenges in the first five years after heavy violent conflict. For this we conducted qualitative interviews with 10 primary and secondary teachers, who thought in inner school cities in Mosul. Iraq has been affected by conflict for many years. With the occupation of the country by the terrorist militia ISIS from 2014 to 2017, the most recent conflict was not long ago. Interviews were conducted in Arabic and translated into English and analyzed by a working group. Our results provide valuable insights in the lived experiences of teachers in Mosul. Our study reveals how the complex interplay of infrastructure and reconstruction of school organization reflects on teachers' ideas and learning environments. This contributes to a more nuanced, differentiated and context-sensitive understanding of pedagogical work in war- and conflict contexts, which provides valuable insights for peacebuilding.

Session C 4

25 June 2024 11:00 - 12:30

Aula 14

Single Paper

Bystander Dynamics and Social Learning Theory

Keywords: Attitudes and Beliefs, Motivation, Peer Interaction, Quantitative Methods, Self-efficacy, Social Interaction, Social media

Interest group:

Chairperson: Meeli Rannastu-Avalos, University of Tartu, Estonia

Cyberhate's Bystanders: Examining the Influence of Social Learning Theory on Their Responses

Keywords: Attitudes and Beliefs, Self-efficacy, Social Interaction, Social media

Presenting Author: Esperanza Espino, Universidad Loyola Andalucía, Spain; **Co-Author:** Olga Jiménez-Díaz, Facultad de Ciencias de la Educación,

Universidad de Sevilla, Spain; **Co-Author:** Joaquín A. Mora-Merchán, Universidad de Sevilla, Spain; **Co-Author:** Rosario Del Rey, Seville University, Spain

Cyberhate is a new form of cyberviolence with significant social and scientific interest due to its prevalence and consequences among adolescents and youths. Although some studies have advanced in understanding how, and why, are they involved as aggressors and victims, the crucial role of bystanders in cyberhate remains unexplored. Thus, the current study aims to explore the explicative capacity of the Social Learning Theory (Bandura, 1986) on bystanders' responses to cyberhate by considering individual variables (i.e., gender, age, self-efficacy, need for online popularity, previous experiences of cyberhate victimization and aggression) and environmental variables (i.e., subjective norms, and peers', family's, and teachers' injunctive norms). For the study, 2539 students participated (49.1% boys, 49.2% girls, 1.7% other) aged 11-18 years ($M= 14.07$; $SD= 1.39$). Structural equation model was applied to test the Social Learning Theory. A good fit and explicative variances were found for the defensive (supporting victims), passive and reinforcing responses (supporting aggressors) in boys and girls. Results highlight the explicative capacity of subjective norms, self-efficacy, teachers' injunctive norms, age and previous cyberhate victimization in the three response profiles. In the reinforcing responses, family injunctive norms were also relevant, and additionally among girls, peers' injunctive norms and the desire for popularity. In defending and passive response models, among boys, the previous aggression experience was also significant. These findings support the

explanatory validity of the Social Learning Theory on human behaviour, especially on cyberhate responses, providing relevant results for the development of future psychoeducational programs.

Exploring Adolescent Bystander Profiles in Non-Consensual Sexting through Social Learning Theory

Keywords: Peer Interaction, Self-efficacy, Social Interaction, Social media

Presenting Author:Mónica Ojeda, Universidad de Sevilla, Spain; **Co-Author:**Daniela Villa Henao, Facultad de Ciencias de la Educación. Universidad de Sevilla, Spain; **Co-Author:**Joaquín A. Mora-Merchán, Facultad de Ciencias de la Educación. Universidad de Sevilla, Spain; **Co-Author:**Rosario Del Rey, Seville University, Spain

Previous research has primarily focused on understanding the behavior of victims and aggressors in non-consensual sexting (NCS). However, there is limited knowledge allowing predicting the response profiles of bystanders to this phenomenon using a theoretical model. Our study seeks to deepen comprehension in this area by investigating how the personal and contextual factors within Bandura's Social Learning Theory predict the response patterns of bystanders in the context of non-consensual sexting (NCS). A structural equation model (SEM) was tested including both genders and, separately for girls and boys, to explore the explanatory capacity of the Social Learning Theory in understanding adolescent response profiles to NCS. The sample comprised 2539 secondary education students (49.2% girls, 49.1% boys, 1.7% others; $M_{age} = 14.07$; $SD = 1.39$) who responded to a paper-and-pencil survey. The results showed the predominant response profile is defensive, followed by the passive and reinforcing profiles. The model fits to explain the three bystanders' response profiles where personal factors, like self-efficacy and age, as well as contextual factors, such as teacher norms and subjective norms, emerge as the most significant variables in the model. Furthermore, variables such as injunctive friend's norms and the need for popularity were identified as significant only for the reinforcing profile. It's concluded that this framework holds promise as a foundational underpinning for initiatives related to educational awareness and decision-making during adolescence.

Factors influencing cyberbullying bystanders' responses: A Test of Bandura's Social Learning Theory

Keywords: Motivation, Quantitative Methods, Self-efficacy, Social Interaction

Presenting Author:Ana Alcántara, Facultad de Ciencias de la Educación. Universidad de Sevilla, Spain; **Co-Author:**Rosario Del Rey, Seville University, Spain; **Co-Author:**José A. Casas-Bolaños, Universidad de Córdoba, Spain; **Co-Author:**Joaquín A. Mora-Merchán, Facultad de Ciencias de la Educación. Universidad de Sevilla, Spain

Bystanders' responses in episodes of cyberbullying have emerged as a key target of study within this field, given its significant role in exacerbating and de-escalating cyberbullying. Some previous theory-based research has tried to explain it from the Social Learning Theory (SLT) stating that bystanders' responses are influenced by personal and contextual factors such as social norms, self-efficacy, motivation for social network use, cyber-victimisation, cyber-aggression experience, age, and gender. However, these factors have mostly been examined separately and without establishing a model in which the types of responses are explained in an integrated way. So, this study aims to advance in this line of research analyzing the explanatory power of SLT in relation to the three bystanders' profiles: defender, reinforcer, and passive. 2,539 participants (49.1% boys, 49.2% girls, 1.7% other sex) aged 11-18 years ($M = 14.07$, $SD = 1.39$) completed self-report questionnaires. Three structural equation models were calculated with EQS 6.4 to analyse direct relationship between personal and environmental factors and each response profile using the Least Square Robust method. Results reveal social norms as well as personal factors are predictors for the three types of bystanders. Therefore, this study confirms the explanatory power of the Social Cognitive Theory on cyberbullying bystander behaviour, and for each of the three roles that bystanders can assume: reinforcer, defender, and passive. These findings will enable us to suggest prevention and social intervention programmes that include a normative framework concerning cyberbullying, tailored to the educational context in which they are implemented and by attending to all those involved in the dynamics of the phenomenon. **Keywords:** cyberbullying bystanders' behaviour, social cognitive theory, social norms, personal factors, response profiles

Session C 5

25 June 2024 11:00 - 12:30

Aula 5

Poster Presentation

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

Enhancing Learning through Innovative Strategies

Keywords: Action Research, Attitudes and Beliefs, Communities of Learners and/or Practice, Cooperative / Collaborative Learning, Creativity / Divergent Thinking, Critical Thinking, Educational Challenges, Foreign and Second Language Acquisition, Game-based Learning, In-service Teachers, Instructional Design, Misconceptions, Mixed-method Research, Pre-service Teachers, Problem-based Learning, Psychology, Qualitative Methods, School Effectiveness, Science and STEM, Science Education, Secondary Education, Survey Research, Teacher Professional Development, Vocational Education and Apprenticeship Training

Interest group: SIG 01 - Assessment and Evaluation, SIG 06 - Instructional Design, SIG 10 - Social Interaction in Learning and Instruction, SIG 11 - Teaching and Teacher Education, SIG 18 - Educational Effectiveness and Improvement

Chairperson: Dimitrios Moustakas, Aristotle University of Thessaloniki, Greece

Improving secondary science assessment with a diagnostic toolkit

Keywords: Misconceptions, Science Education, Secondary Education, Survey Research

Presenting Author:Florian Stern, University of Geneva, Switzerland; **Co-Author:**Andreas Müller, University of Geneva, Switzerland; **Co-Author:**Sebastien Roch, University of Geneva, Switzerland

Science education research has provided a considerable number of tests to measure cognitive and affective variables, e.g. about conceptual understanding, problem solving, scientific literacy, curiosity, attitudes and others. Such tests are essential for assessing and improving teaching practices, but are still little used by teachers themselves mostly due to time constraints and implementation difficulties. Our goal is to develop a collection of short and validated diagnostic tests ready to be used in the science classroom for secondary science teaching in [country blinded for review]. The unique aspect of our project is the close collaboration between teachers and researchers. On the one hand, teachers play a key role in identifying crucial classroom variables, ensuring ecological validity within existing teaching programs, conducting validations within their own classes, and providing feedback for continuous improvement. On the other hand, researchers provide a research background on existing tests, explaining their theoretical underpinnings, and offer a methodological support for test development and validation. We give an example of such a collaborative process of test development and validation for a course about mechanics. Our results are presented at two distinct levels. First, on the "product" level, a concise and ecologically relevant test is provided, exhibiting satisfactory psychometric indicators. Second, on the "process" level, a roadmap to meet this common objective together with the teacher partner, with respect to the multiple constraints of both practice and research (temporal, curricular, methodological). The discussion explores the implications of diagnostic findings for classroom practices.

Who benefits the most? The interaction of interleaved practice and prior knowledge.

Keywords: Game-based Learning, Instructional Design, Psychology, Science and STEM

Presenting Author:Maria Danzglock, Universität Kassel, Germany; **Co-Author:**Martin Hänze, University of Kassel, Germany; **Co-Author:**Roland Berger, Universität Osnabrück, Germany

Interleaved practice has been shown to have significant benefits in various learning contexts, especially in the STEM field. However, it is unclear whether this effect is consistent across all learners. While learners with limited prior knowledge may benefit more from interleaved practice by improving their ability to apply new knowledge, the increased difficulty could potentially impede their learning success. To address this question, we conducted a field experimental study with 131 students in 10 physics courses focusing on the motion of charged particles in magnetic and electric fields. The instructional approach involved a serious

game, and learning success was assessed both immediately and eight weeks later. Our findings confirm the positive impact of interleaving, with a more pronounced effect observed at lower levels of prior knowledge. These results remain significant even after an 8-week period. In conclusion, this study provides valuable insights into the nuanced dynamics of interleaved practice, highlighting its effectiveness, especially for learners with limited prior knowledge.

Exploring Social Dimensions of a Personalized Learning Environment

Keywords: Communities of Learners and/or Practice, Qualitative Methods, Science and STEM, Vocational Education and Apprenticeship Training

Presenting Author: Jose Maria Carazo Abolafia, Universidad de Navarra, Spain; **Co-Author:** Priya Sharma, The Pennsylvania State University, United States; **Co-Author:** Angel Sobrino, Universidad de Navarra, Spain

This paper reports on a design-based research exploration of a personalized learning environment in a Grado Superior de Formación Profesional program, a Spanish two-year professional degree. The program focuses on the development of web applications and takes place in Seville, Spain. Two courses were designed to support students' mastery via providing them with personalization and self-directed learning options. The personalization applied mainly focuses on each individual learning pace and needs. Interviews and focus groups were conducted with ten students in year one and ten students in year two to understand their perceptions related to the course design and their learning. Despite the design focus on personalization, our data suggest the importance of social dimensions and emergent characteristics of a learning community that should be considered in future redesign. Therefore, instead of a conflict between social dimensions of learning and a self-paced and more autonomous learning, we found a spontaneous integration from students' side. Thus, we agree that if we stick to real situations, we need to integrate apparently opposite theoretical approaches within our design of learning (Cobb, 1994). In particular, we adhere to Rogoff (1990) when she suggests that a focus on individual and social learning can be simultaneously explored.

Challenge-based Learning for Social Entrepreneurship Education in Vocational Schools

Keywords: Attitudes and Beliefs, Instructional Design, Problem-based Learning, Vocational Education and Apprenticeship Training

Presenting Author: Selina Michel, Technical University Munich, Germany; **Co-Author:** Manuel Förster, Technische Universität München (TUM), Germany

Social entrepreneurship offers potential for products and services which are ecologically, socially, and economically sustainable and provide new solutions to current societal challenges. Although there is a call for entrepreneurship education at all levels of education and to include non-traditional entrepreneurs, social entrepreneurship education and research is mostly focused on higher education or high schools and vocational education and training (VET) is neglected. Entrepreneurial intentions and entrepreneurial orientation, including the preference for innovation, attitudes towards risk, proactiveness and self-efficacy, are widely researched predictors of becoming an entrepreneur. Social entrepreneurship education targets these attitudes and intentions. Challenge-based Learning (CBL) is a promising approach for social entrepreneurship education, as students learn to tackle complex and ill-defined real-world societal challenges by developing sustainable solutions using entrepreneurial approaches. Currently, there is limited empirical evidence on learning outcomes in social entrepreneurship education using CBL in the VET context. Therefore, this study aims to analyze if there is a change in the entrepreneurial intention and orientation of VET students by participating in a CBL-oriented social entrepreneurship course. During this study, four social entrepreneurship courses were conducted at VET schools. In all courses, CBL features like working on real-world challenges were implemented and mapped. In a longitudinal design, N = 49 VET students were surveyed before and after their participation in the social entrepreneurship course using standardized scales. Findings suggest that there is a significant increase in entrepreneurial intention but not in entrepreneurial orientation. The implementation of the CBL courses is discussed as well as implications for research and practice. As a conclusion, CBL shows potential to foster VET student's entrepreneurial intention in social entrepreneurship education.

Exploring the Impact of Professional Learning Networks: A Systematic Literature Review

Keywords: Communities of Learners and/or Practice, Cooperative / Collaborative Learning, School Effectiveness, Teacher Professional Development

Presenting Author: Ariadne Warmoes, Vrije Universiteit Brussel (VUB), Belgium; **Co-Author:** Iris Decabooter, Hasselt University, Belgium; **Co-Author:** Katrien Struyven, Hasselt University - UHasselt, Belgium; **Co-Author:** Els Consuegra, Vrije Universiteit Brussel, Belgium

The implementation of professional learning networks (PLNs) is widely spread, however empirical evidence about the impact of PLNs is still scarce. Therefore, by means of a systematic literature review (n=20), this study summarizes results of PLNs on participant, school and student level, along with the reported explanations for results. Our findings show moderate to positive impact on participant level, with notable improvements in knowledge, skills, attitudes, and some reported changes in practice. Studies researching results on school level reported moderate change. These changes encompass knowledge sharing with the school team or the school team adopting actions or tools developed in the PLN. When it comes to effects on student level, mixed results were found, ranging from no significant to a positive link. The reported explanations are in line with previous research, involving influencing processes and factors such as collaboration, inquiry, and shared focus. Lastly, concerns were raised about the transparency and rigorosity of both PLN designs and research designs.

Pre-service teachers' futures consciousness

Keywords: Creativity / Divergent Thinking, Educational Challenges, Mixed-method Research, Pre-service Teachers

Presenting Author: Iina Hyyppä, University of Helsinki, Finland; **Co-Author:** Antti Laherto, University of Helsinki, Finland; **Co-Author:** Ilona Södervik, University of Helsinki, Finland; **Co-Author:** Heidi Krzywacki, University of Helsinki, Finland

This study addresses a crucial need for teachers' agency amid societal and ecological crises, where education serves to create better futures. As teachers hold a vital role within society, it is crucial to encourage them not only to adapt and react to change, but to act as agents of change. The study applies ways of thinking from the field of Futures Studies into research on teacher agency. The research employs the concept of futures consciousness to explore how teacher students conceptualize futures, understand systems and complexities as well as their own values and agency in relation to them. Deeper understanding of pre-service teachers' future visions and futures consciousness offers insights to the necessary changes within teacher education for more sustainable futures. The research questions of the pilot were: (1) What kinds of future visions do first-year teacher students present? and (2) How do pre-service teachers express different dimensions of futures consciousness? Altogether, 179 first-year teacher students answered short essay questions on their desired future workday and multiple-choice questions on their futures consciousness in an online lecture in Autumn 2023. The data is analysed both qualitatively, with an inductive content analysis of the essays, and quantitatively, with an exploratory factor analysis. Preliminary results show that teacher students find it difficult to imagine desired futures, while simultaneously feeling responsible for creating societal changes. The results of this study will be used to develop various activities to foster teacher students' futures thinking skills. Previous research indicates that futures thinking activities promote imagination of alternatives, navigation of uncertainties, and futures perceptions. This study extends those results into a teacher education perspective. Amid global societal and ecological crises, the role of education in creating better futures is increasingly important, and teacher students play a key role as societal changemakers.

Collaborative Action Research for Critical-Thinking-Infused English Class in Japanese High Schools

Keywords: Action Research, Critical Thinking, Foreign and Second Language Acquisition, In-service Teachers

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

The 21st century underscores the importance of fostering critical thinking (CT), particularly in educational contexts. Japan's national curriculum has been revised to prioritize the cultivation of critical faculties in students, especially evident in subjects like high school English language. However, Japanese teachers expressed lower self-efficacy in CT cultivation compared to international counterparts. To address this issue, a collaborative action research was conducted with in-service high school English teachers. Following the principles of practice-based research (PBR) emphasises collaborative partnerships between researchers and teachers, this study aimed to inform future teacher training for the seamless integration of CT into daily teaching practices. Three research questions guided the study: identifying CT-related challenges in students, addressing these challenges collaboratively, and evaluating students' responses to interventions. Four high school English Language teachers in Japan participated. They identified CT challenges related to Interpretation, Analysis, Explanation, and Self-Regulation based on the Delphi Report (Facione, 1990). Customised teaching materials and rubrics were collaboratively developed to deal with those challenges. Interventions spanned 1 to 2 school terms, and pre-, during-, and post-intervention data were collected and scored by both teachers and the researcher. Results revealed diverse approaches employed by the teachers to integrate CT, particularly in material development and evaluation. Student performance indicated improvements, such as increased use of different pronouns and the inclusion of opposing opinions in writing, demonstrating progress toward objectivity. The

study contributes insights into how in-service English teachers perceive and address students' CT challenges, showcasing collaborative efforts and observed changes in student performance. This action research, conducted within the Japanese high school curriculum, can inform in-service teachers in similar contexts, pre-service teachers, and teacher trainers, while also offering valuable examples for educators outside the Japanese curriculum seeking to integrate CT into language classes.

Session C 6

25 June 2024 11:00 - 12:30

Aula 11

Poster Presentation

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

Motivation, Emotion and Affect

Keywords: Art Education, Classroom Assessment, Cognitive Skills and Processes, Computer-assisted Learning, Emotion and Affect, Feedback, Higher Education, Immersive Technologies for Learning, In-service Teachers, Pre-service Teachers, Psychology, Qualitative Methods, Quantitative Methods, Researcher Education, Secondary Education, Social Aspects of Learning and Teaching, Teacher Professional Development, Teaching Approaches

Interest group: SIG 01 - Assessment and Evaluation, SIG 07 - Technology-Enhanced Learning And Instruction, SIG 08 - Motivation and Emotion, SIG 11 - Teaching and Teacher Education, SIG 17 - Methods in Learning Research, SIG 25 - Educational Theory

Chairperson: Ceren Baser Kanbak, Middle East Technical University, Turkiye

A conceptual re-work of early career academic experiences of teaching and work through Perezhivanie.

Keywords: Emotion and Affect, Higher Education, Researcher Education, Social Aspects of Learning and Teaching

Presenting Author: Felipe Sanchez, Lancaster University, Chile

The challenges of early career academics (ECA) in Higher Education Institutions (HEI) have been extensively described in the literature. All over the world, ECA in HEI face precarious working conditions, high competition, etc., to which teaching labour is added. Thus, the pressure to perform in all fronts and levels undoubtedly encompasses and frames the experience of entering this field of work. Still, the literature has been inconsistent when it comes to describing their experiences and therefore some have concluded that what predominates here are mix feelings. Adding to that body of knowledge, this article also draws from the research on doctoral education for teaching and the emotionality that plays out from the experiences of the role, of teaching and of learning, to get a better sense of the phenomenon. So far, the way that this work is experienced has been descriptively outlined yet a clear space for further work can be found in articulating how those experiences get to be such. This paper contributes to the field by conceptually re-working the way ECA experience their work in HEI in general, and teaching and learning in particular, to argue that experiencing itself might be inscribed within a learning process. To do so, this paper explores the concept of perezhivanie by Vygotski (1994) to provide a theoretical framework to examine the phenomenon from another light. Re-working this phenomenon through perezhivanie means that the experience of ECA could be collectively learnt and thus, that it could be intentionally produced and transformed in specific ways in different educational settings.

A methodological discussion of Joint Poetic Transcription for researching learning experiences.

Keywords: Art Education, Emotion and Affect, Higher Education, Qualitative Methods

Presenting Author: Felipe Sanchez, Lancaster University, Chile

This paper is a methodological discussion regarding doing Poetic Transcription jointly with the research participants to create data. Within the frame of a larger research project centred on Early Career Academics experiences of teaching in Higher Education, learning for their role and learning to teach, this paper explores the conversations had with all 11 participants regarding the use of Joint Poetic Transcription to produce the data for the research project. Early Career Academics (ECAs) often step into Higher Education Institution (HEI) teaching roles without the necessary pedagogical know-how (Emmioğlu, et al., 2017; Salimzadeh et al., 2017), adding to their already extensive list of challenges (Hollywood et al., 2020; Nästesjö, 2020). This situation raises questions about how academics in higher education navigate their experiences of teaching. The main project behind this paper aims to illuminate the learning journey of ECAs experiencing teaching. On top of that, it advocates for Art-based Research via Poetic Transcription to research and reflect on this process, as it has gained some attention for researching experiences (Sánchez, 2023). Recognizing research as a creative craft, Joint Poetic Transcription involves participant collaboration in creating poems as data. This transformative, participatory process redefines research as experiential and productive, and thus some challenges arise. Specifically responding to the literature regarding the quality of this methodology, this paper argues that engaging participants in crafting poems would offer a unique avenue for learning from their experiences and thus provide a way to argue for the value of said method. Through Participant Response (Faulkner, 2016) for assessing quality, a way of evaluating if the methodology was well executed in its transformative and learning character could be provided. So far, preliminary Thematic Analysis reveals participants find this method a safe space to work through experiences, fostering transformation and creating valuable reflections.

Overclaiming one's own teaching practice – Development of a new measure

Keywords: In-service Teachers, Pre-service Teachers, Teacher Professional Development, Teaching Approaches

Presenting Author: Roman Zviagintsev, University of Vienna, Austria

Abstract This research addresses the issue of assessing schoolteachers' knowledge on teaching practices, specifically focusing on the challenges associated with self-report measures. Although the educational community acknowledges the value of practices such as 'Blended learning' and 'Flipped classroom,' there are still gaps in evaluating teacher actual knowledge regarding these methods. Current measures encounter difficulties with open-answer formats, social desirability bias, and diverse educational contexts. This study suggests using the overclaiming technique (OCT) as a novel measurement tool to improve the reliability of teachers' self-reported knowledge of teaching practices. As a part of the bigger study, I have conducted a survey with pre-service and in-service teachers in Austria (pilot phase), using OCT to assess their familiarity, detailed knowledge, and application of both real and fake teaching practices. The preliminary results indicate that 63% of participants do not overclaim, while 37% admit to having knowledge or using at least one fake practice. Logistic regression models suggest that teachers who are already working and those with higher self-efficacy are more likely to overclaim. The study aims to explore predictors of overclaiming, considering group differences and connections with teachers' working status and socio-economic factors. The findings contribute to understanding the integrity of self-reported data on teaching practices. This has implications for refining teacher education programs and guiding future research in this domain.

The Psychometric Evidence of the Revised Version of the Adapted Emotional Intelligence Questionnaire

Keywords: Emotion and Affect, Psychology, Quantitative Methods, Secondary Education

Presenting Author: Ijtihadi Kamilia Amalina, University of Szeged, Doctoral School of Education, Indonesia

Mathematical problem-solving is influenced by emotions; however, there is a noticeable lack of specific assessment tools focusing on the social-emotional aspects within this domain. A prior study addressed this by adapting the Emotional Intelligence of the Mathematics Achievement of Students (IEIMAS) questionnaire. Nonetheless, this adaptation encountered some challenges, particularly related to a misfitting item and variations in the sampled population. This study aims to examine the psychometric evidence of the revised version of the adapted IEIMAS questionnaire. The analysis was conducted among students in grades 7 to 9 ($n = 1,067$) using confirmatory factor analysis. The results confirmed a good model fit by meeting various fit indices. The factor loadings ranged between .522 and .717, demonstrating both acceptability and alignment with the theoretical framework. Moreover, the questionnaire exhibited high internal consistency ($\alpha = .91$). It is recommended that future research diversifies the sample across different school types and geographical locations.

Competition as a Design Feature of an Immersive Virtual Reality Learning Environment

Keywords: Cognitive Skills and Processes, Emotion and Affect, Immersive Technologies for Learning, Quantitative Methods

Presenting Author:Charlotte Diekmann, Bergische University Wuppertal, Germany; **Co-Author:**Claudia Schrader, Bergische Universität Wuppertal, Germany

The use of immersive virtual reality (IVR) has become quite popular in research. Numerous claims have been made about the effectiveness of IVR. It is argued that IVR fosters learners' virtual presence in line with increased enjoyment (Makransky & Lilleholt, 2018), decreased extraneous cognitive load (Parong et al., 2020) and therefore better learning outcomes (Pekrun et al., 2011) compared to low immersive media. Studies that examine the educational effectiveness of IVR, however, often contain mixed results (Polcar & Horejsi, 2015). One possible solution is to focus on separate design features that might have an impact rather than on IVR as a whole. This study investigates whether the addition of the gaming element 'competition' to an IVR chemistry laboratory has an impact on learners' virtual presence, learning-centred emotions, cognitive load and learning outcomes. Seventy-one ninth-graders participated in the study, all working in an IVR chemistry laboratory for learning about the synthesis of sodium chloride. Thirty-five pupils were told that they were competing for points, whereas 36 pupils learned in the IVR without any competing instruction. The results show a significant increase in the learning-centered emotion enjoyment and a significant reduction in boredom as well as a learning gain across both conditions. However, by comparing both conditions, the results demonstrate that competition is not significantly related to virtual presence, learning-centered emotions of enjoyment, boredom, anger and frustration, cognitive load and learning outcomes.

To Choose or not to Choose: On the Impact of a Choice Option for Feedback in Digital Assessment

Keywords: Classroom Assessment, Computer-assisted Learning, Emotion and Affect, Feedback

Presenting Author:Livia Kuklick, IPN - Leibniz Institute for Science and Mathematics Education, Germany

This preregistered experimental study investigates the cognitive and affective-motivational potential of letting students choose whether they want to receive automated, immediate feedback in contrast to simply administering immediate feedback to them. In a between manipulation, 150 undergraduates (planned N) work on a computer-based low-stakes geometry assessment with 20 constructed-response tasks while either receiving system-administered elaborated feedback after each task or choosing for themselves whether they want to receive the immediate feedback message. During the assessment, students repeatedly rate their feedback-related control-value appraisals and their task-level positive and negative emotions. As a behavioral outcome, the study further analyzes the time that students voluntarily exert on the self-paced feedback messages and also employs a posttest to assesses transfer learning. We hypothesize that the presence of a choice option improves how students react to the feedback during the assessment cognitively as well as affectively and motivationally. We further assume that students voluntarily spend longer time with feedback they chose themselves and that students learn more from it. Data collection is ongoing and the results will be ready for presentation at JURE 2024.

Workshops II 1

25 June 2024 14:00 - 15:30

Aula 13

JURE 2024 Workshop

From frequentist to Bayesian statistics

Keywords: Competencies, Experimental Studies, Meta-analysis, Quantitative Methods

Interest group:

Statistics is not just another tool in empirical research within psychology and education. It is a critical bridge to understanding the relationships between variables, allowing us to make well-informed decisions. Recently, for various reasons, there has been a shift from classical frequentist approaches towards Bayesian statistics. An advantage of Bayesian methods is that they test the likelihood of events under specific hypotheses, integrating prior knowledge and the newly acquired evidence, thus updating our understanding based on the new data and providing a more dynamic framework than the traditional frequentist methods. Here, we will examine the potential advantages of using Bayesian methods, including practical demonstrations of analyses with primary (experimental) and secondary (meta-analytical) data.

From frequentist to Bayesian statistics

Presenting Author:Manuel Perea, University of Valencia / Interdisciplinary Research Structure for Reading Research (ERI Lectura), Spain

Statistics is not just another tool in empirical research within psychology and education. It is a critical bridge to understanding the relationships between variables, allowing us to make well-informed decisions. Recently, for various reasons, there has been a shift from classical frequentist approaches towards Bayesian statistics. An advantage of Bayesian methods is that they test the likelihood of events under specific hypotheses, integrating prior knowledge and the newly acquired evidence, thus updating our understanding based on the new data and providing a more dynamic framework than the traditional frequentist methods. Here, we will examine the potential advantages of using Bayesian methods, including practical demonstrations of analyses with primary (experimental) and secondary (meta-analytical) data.

Workshops II 2

25 June 2024 14:00 - 15:30

Aula 14

JURE 2024 Workshop

Science communication and early career researchers

Keywords: Cognitive Skills and Processes, Communication Skills, Educational Policy, Researcher Education

Interest group:

In this workshop, we will look at the importance of science communication to the early career researcher. Should it be part of your responsibilities? We will look at the advantages and pitfalls of science communication. What are the priorities for media outlets and (how) should you appeal to them? What is the role of the press release? How should you utilise direct communication methods like social media, blogging, and podcasts? Dare you be interviewed about your research? How should you tackle including numerical information in your communication? Should you communicate your work in a way that is 'relatable' or even 'clickbait'? We will also cover how journalists and science communicators can be engaged as collaborators in the dissemination of your research, and tips to optimise this process.

Science communication and early career researchers

Presenting Author:Michael S. C. Thomas, Birkbeck, University of London, United Kingdom

In this workshop, we will look at the importance of science communication to the early career researcher. Should it be part of your responsibilities? We will look at the advantages and pitfalls of science communication. What are the priorities for media outlets and (how) should you appeal to them? What is the role of the press release? How should you utilise direct communication methods like social media, blogging, and podcasts? Dare you be interviewed about your research? How should you tackle including numerical information in your communication? Should you communicate your work in a way that is 'relatable' or even 'clickbait'? We will also cover how journalists and science communicators can be engaged as collaborators in the dissemination of your research, and tips to optimise this process.

Workshops II 3

25 June 2024 14:00 - 15:30

Aula Máster 1

Publishing in scholarly journals

Keywords: Communication Skills, Doctoral Education, Meta-analysis, Writing / Literacy

Interest group:

The workshop aims to provide insights into the process of academic publishing in a scholarly journal. Educational Research Review is one of the high-prestige EARLI journals, with a focus on the publication of review studies and meta-analytic studies. The workshop leaders are responsible for the journal both from the academic perspective and the publishing perspective. The workshop is open for all JURE participants, irrespective of their prior experience and success in publishing. The participants' experiences will be included to illustrate steps that promote (or derogate) success in publishing. We will (1) present an introduction to writing (why and how?). Then we will discuss, (2) how to choose a journal and how to tailor the manuscript appropriately. We will further outline the (3) function of peer review and (4) editorial decisions. A next step will be to prepare the workshop participants (5) how to respond to peer review and editorial comments. Finally, we provide an overview of (6) essential publishing ethics.

Publishing in scholarly journals

Presenting Author:Hans Gruber, University of Regensburg, Germany; **Presenting Author:**Ann Corney, Elsevier Ltd, United Kingdom

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Workshops II 4

25 June 2024 14:00 - 15:30

Aula Máster 2

JURE 2024 Workshop

Reviewing science: why, how, and writing it up

Keywords: Cognitive Skills and Processes, Communication Skills, Meta-analysis, Metacognition

Interest group:

A literature review is essential if you want to plan and conduct an empirical study. The review will be both a summary of what we know and of what we need to know. Thus, it should be the basis for research questions and design of any empirical study. However, a review can also in itself be designed as a research approach where we aim to answer research questions by bringing together findings from primary research in a systematic way. In this workshop we will look at different formats of research reviews and how they might be constructed and reported. Guidelines, tools and examples will be discussed in the workshop.

Reviewing science: why, how, and writing it up

Presenting Author:Helge I. Strømsø, University of Oslo, Norway

A literature review is essential if you want to plan and conduct an empirical study. The review will be both a summary of what we know and of what we need to know. Thus, it should be the basis for research questions and design of any empirical study. However, a review can also in itself be designed as a research approach where we aim to answer research questions by bringing together findings from primary research in a systematic way. In this workshop we will look at different formats of research reviews and how they might be constructed and reported. Guidelines, tools and examples will be discussed in the workshop.

Session D 1

25 June 2024 16:00 - 17:30

Aula 1

Single Paper

Assessment and Evaluation, Cognitive Science, Learning and Social Interaction

Online Learning Strategies

Keywords: Assessment Methods, E-learning / Online Learning, Feedback, Higher Education, Informal Learning, Learning Analytics, Learning Strategies, Social media

Interest group: SIG 01 - Assessment and Evaluation, SIG 10 - Social Interaction in Learning and Instruction, SIG 27 - Online Measures of Learning Processes

Chairperson: Sophie Harms, Humboldt-Universität zu Berlin, Germany

Effects of practice testing and feedback on learners' performance in a Massive Open Online Course

Keywords: Assessment Methods, E-learning / Online Learning, Feedback, Learning Strategies

Presenting Author:Mi Jin Park, The CUNY Graduate Center, United States; **Co-Author:**Maria Janelli, Scratch Foundation, United States; **Co-Author:**Anastasiya A. Lipnevich, CUNY Graduate Center, United States; **Co-Author:**Terrence Calistro, CUNY Graduate Center, United States; **Co-Author:**Felix J. Eßer, CUNY Graduate Center, United States

In this experimental study, we examined the effects of practice tests and feedback on performance and completion in a five-module massive open online course (MOOC). Participants (N = 6100) were adults enrolled in the American Museum of Natural History's (AMNH) climate change MOOC. Participants were randomly assigned to one of four conditions. After completing each module, learners in the first treatment group took practice tests without receiving feedback. Learners in the second treatment group took practice tests and received basic (correct/incorrect) feedback. Learners in the third treatment group took practice tests and received detailed feedback. The control group did not take practice tests and, hence, received no feedback. Post-tests were administered after each module. Results indicated that: (1) among all learners in a MOOC, students in the practice test/basic feedback and practice test/detailed feedback conditions outperformed their counterparts in the control and practice test/no feedback conditions; (2) there were no differences in persistence and completion among conditions; (3) conscientiousness was the only predictor of course persistence and completion. These findings offer a new contribution to assessment and feedback literature in a self-paced online science course. **Keywords:** MOOC, practice tests, feedback, persistence, completion

Deciphering Digital Dynamics: Cluster Analysis of Engagement Patterns in an Influencer Community

Keywords: E-learning / Online Learning, Informal Learning, Learning Analytics, Social media

Presenting Author:Stephanie Bowles, Penn State, United States

This study delves into the intricate dynamics of online learning communities within the Non-Fungible Tokens (NFTs) space on Twitter. Focusing on NFT influencers, the research explores the formation of clusters based on engagement metrics, sentiment analysis, and seasonal variations. A comprehensive dataset of a group of influencers and over a million tweets from 2022 is analyzed, revealing distinct patterns in posting behaviors, sentiments, and engagement levels. Through K-medoids clustering, the influencers are categorized into quartiles, with Q1 and Q2 exhibiting well-defined clusters, suggesting more cohesive and focused behavior. In contrast, Q3 and Q4 display less distinct clustering, indicating a diverse and dynamic landscape of influencer engagement. The study highlights the nuanced nature of influencer behavior, emphasizing the multifaceted interplay of content, audience, and individual strategies within the NFT

community. The findings underscore the need for a nuanced perspective on the roles played by influencers in shaping discourse and learning opportunities in online communities. Despite limitations, this study lays the groundwork for future research exploring additional variables and providing a more robust understanding of influencer dynamics in online social media communities.

Investigating the Influence of Training Difficulty on the Learning Outcomes of Medical Students

Keywords: E-learning / Online Learning, Higher Education, Learning Analytics, Learning Strategies

Presenting Author: Erva Nihan Kandemir, Ecole Normale Supérieure, PSL University, CNRS, France; **Co-Author:** Jill-Jênn Vie, Soda team, Inria Saclay, France; **Co-Author:** Adam Sanchez-Ayte, Université Numérique en Santé et Sport (UNESS), France; **Co-Author:** Olivier Palombi, Université Grenoble Alpes, Grenoble INP, CNRS, Inria, LIG, France; **Co-Author:** Franck Ramus, École Normale Supérieure, PSL University, EHES, CNRS, France

Determining an optimal training difficulty level for the best learning outcome is a crucial goal for adaptive educational systems. Literature supports the Inverted U-shape Hypothesis, suggesting that the ideal challenge level for learning is neither too easy nor too difficult. However, this optimal point depends on the type of training and response modality and may vary across domains, necessitating thorough examination before implementing adaptive learning interventions. This study aims to investigate the influence of training difficulty on the learning outcomes of French medical students. Using data from a dedicated educational platform in which multiple choice questions are drawn at random, we explored the influence of the mean question difficulty encountered during training, relative to individual student ability, on the learning outcomes of medical students across diverse medical specialties. We first employed the Elo rating system to estimate the difficulty of platform questions and student abilities. A linear mixed-effects model was then used, with final exam performance as the learning outcome; mean relative question difficulty during training (linear and quadratic terms), and student ability as fixed effects while accounting for random effects associated with individual students and medical specialties. Results reveal a significant quadratic effect of mean relative difficulty on the learning outcome ($p < 0.001$), revealing optimal difficulty levels for each medical specialty. Optimal relative difficulty levels corresponded to response accuracy levels ranging from -2.4% in hepatogastroenterology to 2.07% in cancerology. This study reveals that questions in this learning management system are too difficult on average, and to a different extent between medical specialties. Thus, tuning this system for better learning would require drawing easier questions relative to students' abilities, and aiming for different targets for each medical specialty.

Session D 2

25 June 2024 16:00 - 17:30

Aula 5

Single Paper

Assessment and Evaluation, Educational Policy and Systems

Large-scale Assessments and the Economics of Education

Keywords: Assessment Methods, Citizenship Education, Competencies, Economics of Education, Educational Challenges, Gender Issues, Large-scale Assessment, Meta-analysis, Resilience, Sustainable Development

Interest group: SIG 01 - Assessment and Evaluation

Chairperson: Melina Agha, Germany

A comprehensive bibliographical overview of PISA gender gap research

Keywords: Gender Issues, Large-scale Assessment, Meta-analysis, Sustainable Development

Presenting Author: Jonas Stampka, University Heidelberg, Germany; **Co-Author:** Nina Jude, University Heidelberg, Germany; **Co-Author:** David Kaplan, University of Wisconsin-Madison, United States

Following the Agenda 2030 (known as United Nations Sustainable Development Goals), gender disparities in education are to be eliminated. The performance data in PISA, that means how well the 15-year old students performed in reading, mathematics or science tests, functions as a point of comparison, and suggest an insuperable gender gap. We argue that there are three main reasons causing an entanglement of scientific discourse threads and therefore aggravating research in this domain: Gender gaps as a multi-levelled phenomenon, national research findings in international discourse, and the variety of addressed gender disparity variables. To unravel such, we are creating a comprehensive bibliographical overview, a systematic review in broader terms, about articles addressing the PISA gender gap. For this, over five thousand search results, derived from various search engines or repositories and altered synonymous search terms, were filtered down and categorized. The summarized meta data about the publications and synoptic content extraction regarding popularly addressed constructs, relating to the educational gender gap, are supposed to support researchers to navigate this field of interest.

Distinguishing Economic and Political Literacy and their Self-Efficacy: An External Validation Study

Keywords: Assessment Methods, Citizenship Education, Economics of Education, Large-scale Assessment

Presenting Author: Nina Welsandt, University of Duisburg-Essen, Germany

This paper focuses on the analysis of economic literacy and political literacy as independent constructs. Building on previous research in cognitive domains and self-efficacy, the study uses data from the ICCS 2022 and ECON 2022 studies with a representative sample of 3,020 eighth-grade students in North Rhine-Westphalia, a federal state of Germany. The aim of this paper is to determine whether economic literacy and political literacy can be considered independent cognitive domains and to what extent assessments in these areas enable specific predictions for political self-efficacy and economic self-efficacy. The preliminary results, based on correlations and initial regressions, indicate a separation between economic self-efficacy and political self-efficacy, providing support for the hypothesis that these are distinct domains. Furthermore, significant correlations exist between political knowledge and political self-efficacy. To deepen understanding, further research is recommended to incorporate path analyses and subgroup studies, aiming for a more comprehensive exploration of these educational domains.

Digital Competence and Beyond: Exploring Student Success Patterns in PISA 2018 and 2022

Keywords: Competencies, Educational Challenges, Large-scale Assessment, Resilience

Presenting Author: Maren Müller, Centre for International Student Assessment (ZIB), Technical University of Munich, Germany; **Co-Author:** Doris Lewalter, Technical University of Munich (TUM), Germany; **Co-Author:** Jennifer Diedrich, TU München / ZIB / PISA, Germany

Many scientific publications have examined the consequences of measures taken to contain the COVID-19 pandemic. This contribution aims to complement the field by identifying characteristics of students associated with successfully coping with challenging learning environments and situations, using the example of the COVID-19 pandemic. The question is addressed through latent profile analyses of the data from about 11,500 students from the PISA 2018 and PISA 2022 studies in Germany. Therefore, it is possible to compare selected characteristics' role in learning before and after the pandemic. Based on selected research on learning in challenging environments, the variables resilience, self-regulation, sense of belonging to school, and ICT competence were considered in the analyses. Three different profiles can be identified in both PISA cycles. However, students' characteristics and distribution differ between 2018 and 2022: In 2018, most students are considered "Mainstream" with slightly higher competencies in mathematics, reading, and science. than the average. Students considered as 'Vulnerables' and 'Outsiders' demonstrate below-average levels of all variables, with 'Outsiders' displaying notably lower values of the sense of belonging to school. In 2018, 'Outsiders' and 'Vulnerables' performed below average across all three domains. In contrast, in 2022, students can be classified into three approximately equally sized groups: the "Allrounders", "Geeks", and "Nonliners". Compared to the other two groups, the "Nonliners" exhibit very low ICT competencies and, on average, perform worse in all three PISA domains than students in the other groups. This leads to the conclusion that ICT competence is more strongly associated with successful learning in times of crisis like COVID-19 and, hence, the necessity of distance learning. Moreover, a high sense of school belonging and strong self-regulatory skills shown by the "Allrounders" seem to be crucial for attaining above-average competence scores.

Session D 3

25 June 2024 16:00 - 17:30

Aula 12

Single Paper

Motivational, Social and Affective Processes

Best of JURE - Paper

Keywords: At-risk Students, Attitudes and Beliefs, Competencies, Critical Thinking, Educational Challenges, Emotion and Affect, Engagement, Gender Issues, Mathematics / Numeracy, Motivation, Quantitative Methods, Secondary Education

Interest group: SIG 08 - Motivation and Emotion, SIG 15 - Special Educational Needs

Chairperson: Sabiha Üzüm, Middle East Technical University, Turkiye

Reading as a Leisure Activity and tool for Well-Being (Views from Deaf and Hearing Students)

Keywords: At-risk Students, Attitudes and Beliefs, Critical Thinking, Educational Challenges

Presenting Author: Zhuzhuna Gviniashvili, Åbo Akademi University, Finland

Many students primarily associate the benefits of reading with academic success. However, the importance of leisure reading for our physical and emotional well-being remains untapped. Studies on adolescents' reading intentions and perceived barriers to translating intentions into actual reading are scarce. Hearing-impaired students are explicitly excluded from research on recreational reading and well-being. Researchers have focused on the technical aspects of reading acquisition and comprehension in deaf students, while the affective and social domains of reading remain understudied and in need of attention. This study aims to identify the general views and attitudes towards recreational reading among deaf and hearing students, investigate their perceptions of reading as a well-being instrument and explore external factors which either motivate or demotivate them to read. This cross-cultural study involves Finnish and Georgian students and employs the mixed method approach for data collection and analysis. Quantitative surveys assess students' attitudes and engagement in recreational reading, while focus group interviews delve into their intentions and perceived barriers. The results of this study suggest that cultural differences manifest in students' views on reading, yet generally demonstrate positive attitudes towards reading, regardless of their country of origin and degree of hearing loss. Furthermore, the analysis of focus groups reveals barriers to reading, including long school days, large amounts of homework and preferences for other leisure activities. The results of this research will have practical and theoretical implications for students, teachers, parents and policymakers. By emphasizing the social dimension of reading and encouraging students to actively participate in self-selected reading activities, a powerful and distinctive learning platform can be created. The research findings will serve as a foundation for subsequent studies in post-pandemic time, focusing on changes in reading habits. **Keywords:** Attitude, deaf, hard of hearing, intention, reading, recreational reading, voluntary reading

Gender differences (or similarities?) in Math achievement, metacognition, motivation & emotions

Keywords: Emotion and Affect, Gender Issues, Mathematics / Numeracy, Motivation

Presenting Author: Dimitrios Moustakas, Aristotle University of Thessaloniki, Greece; **Co-Author:** Eleftheria Gonida, Aristotle University of Thessaloniki, Greece

Mathematics is often perceived as a field where boys outperform girls. However, recent educational research tells a different story, documenting a convergence between genders in academic performance and a series of other educational variables as well. This study aims to contribute further insights into this topic, by examining achievement in Mathematics alongside students' metacognitive processes, motivational beliefs, and achievement emotions. The study's sample comprised 435 9th-graders (54% female) from 10 regular and 3 experimental public high schools. Mathematics achievement was assessed via a series of school-type mathematical tasks. Additionally, students' i) metacognitive processes (metacognitive awareness, feelings of difficulty and certainty, metacognitive accuracy), ii) motivational beliefs (expectancy, value, and cost) and iii) achievement emotions (enjoyment, pride, anxiety, shame, and boredom) were examined via self-reported questionnaires. The theoretical frameworks employed to evaluate students' motivation and emotions toward Mathematics were Situated Expectancy-Value Theory and Control-Value Theory, respectively. Analyses of variance did not reveal any statistically significant differences between genders, neither in mathematics performance nor in the metacognitive and motivational variables under examination. Gender similarities were also observed for the majority of the achievement emotions; however, female students reported experiencing more anxiety and shame. These results provide additional evidence of the overall convergence of genders in educational variables related to Mathematics, challenging commonly held stereotypes.

Unravelling the Role of Social, Emotional, and Behavioral Skills on High School Students' Engagement

Keywords: Competencies, Engagement, Quantitative Methods, Secondary Education

Presenting Author: Gerardo Pellegrino, University of Padova, Italy; **Co-Author:** Tommaso Feraco, University of Padova, Italy; **Co-Author:** Chiara Meneghetti, University of Padova, Italy; **Co-Author:** Barbara Carretti, University of Padova, Italy

Social, emotional, and behavioural (SEB) skills are malleable competencies that can be developed through life experiences. The recent SEB skills framework (Soto et al., 2021) identifies five skills domains: self-management, innovation, social engagement, cooperation, and emotional resilience. Prior research has highlighted that SEB skills are positively associated with several adolescents' outcomes, such as academic achievement, and psychological well-being. However, it is still not clear how SEB skills support students at school. It could be hypothesized that SEB skills are important individual antecedents of students' engagement (Wang et al., 2019): in other words, students with higher levels of SEB skills might be more engaged in learning activities, and thus achieve better results and feel better at school. Moreover, SEB skills domains might be differently related with the four dimensions of engagement: affective, behavioral, cognitive, and agentic engagement. The present study aims to bridge this gap and further explore the relation between SEB skills, engagement, and students' achievement and well-being. Seventeen hundred five high school students ($M_{age} = 15.69$; $SD_{age} = 1.47$; 938 females) compiled a battery of online questionnaires. The results confirmed that SEB skills have small to medium significant associations with student engagement dimensions. Notably, heightened levels of self-management and innovation skills correlate with increased motivation, involvement, and effort towards school. Additionally, the social engagement skills domain is positively associated with cognitive and agentic engagement, while emotional resilience relates positively to affective engagement. At the same time, SEB skills also showed both direct and mediated associations with students' outcomes (achievement, school and life satisfaction, and burnout). Our study adds more knowledge on the importance of SEB skills for students' success and well-being, and encourages further research on this topic, for example developing new training for adolescents aimed at fostering and reinforcing SEB skills in adolescents.

Session D 4

25 June 2024 16:00 - 17:30

Aula 14

Single Paper

Learning and Social Interaction, Motivational, Social and Affective Processes

Social and Emotional Development in Primary Education

Keywords: Competencies, Computer-supported Collaborative Learning, Emotion and Affect, Engagement, Parental Involvement in Learning, Peer Interaction, Primary Education, Quantitative Methods, Secondary Education, Social Development, Teaching Approaches

Interest group: SIG 08 - Motivation and Emotion, SIG 10 - Social Interaction in Learning and Instruction

Chairperson: Maria Anastasou, University of Cyprus, Cyprus

Boosting primary school classroom climate: the role of social-emotional skills and peer relatedness

Keywords: Computer-supported Collaborative Learning, Emotion and Affect, Peer Interaction, Primary Education

Presenting Author: Benedetta Zagni, University of Padua - Italy, Italy; **Co-Author:** Sara Scrimin, University of Padova, Italy; **Co-Author:** Mark Van Ryzin, University of Oregon, United States; **Co-Author:** Dario Ianes, Free University of Bolzano, Italy

A positive classroom climate is of paramount importance to foster students' well-being and learning. Such a classroom environment is characterized by a good social and emotional atmosphere. A positive classroom climate has been linked with higher students' socio-emotional competencies, better peer and teacher-student relationships, and students more involved in learning activities. Teachers can shape classroom climate through Cooperative Learning (CL) practices. Indeed, CL, in addition to teaching different school subjects, works on the improvement of social-emotional skills such as emotional knowledge, regulation, and social awareness, and supports peer relationships. The present study is the first step of a longitudinal data collection aiming to assess the efficacy of a technology-based CL approach for students in 4th to 6th grade. The aim is to investigate whether students with better socio-emotional skills and peer relationships perceived an overall better classroom climate and were more engaged in classroom activities. Data were collected at the beginning of the school year before the introduction of the CL lessons. A sub-sample of 428 primary (4th to 5th grade) school students ($M_{age} = 8.95$, $SD_{age} = 0.74$, $Males = 212$) was selected for this study. Three self-report questionnaires were used to measure social and emotional competencies, peer relatedness, and classroom climate. Linear regression revealed a positive direct effect of students' social and emotional competencies and peer relatedness on their perception of classroom climate. Gender differences were found with girls reporting an overall better classroom climate. Results support the notion that classroom climate is influenced by students' socio-emotional skills and their relatedness with peers. Thus, fostering social and emotional competencies and peer relations through CL interventions may promote a better classroom climate and students' engagement in lessons.

Linking school climate and students' social and emotional skills: A secondary analysis of OECD data

Keywords: Competencies, Quantitative Methods, Social Development, Teaching Approaches

Presenting Author: Catarina Castro, University Institute of Lisbon (ISCTE-IUL), Portugal; **Co-Author:** Maria Clara Barata, University of Coimbra, Portugal; **Co-Author:** Joana Dias Alexandre, University Institute of Lisbon (ISCTE-IUL), Portugal

Social and emotional learning (SEL) is key to an individual's success throughout life and can be fostered in children's daily settings. School climate has the potential to promote or hinder the development of SEL in students. However, it is not clear from previous research which specific aspects of school climate relate to which SEL skills. This study conducts a secondary data analysis of the Portuguese data from the OECD's 2019 Study on Social and Emotional Skills, exploring the relationships between school climate, namely interpersonal relationships and teaching and learning practices, and 10-year-old students' social and emotional skills, through a structural equation modeling approach. Preliminary results show that students' sense of school belonging and perceived relationships with teachers relate positively to their overall social and emotional skills (correlations between $r=0.041$ and $r=0.343$). The explicit promotion of SEL in the classroom (e.g., separate classes specific to skill development), and teacher support of students (e.g., getting students to believe they can do well) also play a key role for skills such as *Trust in others*, *Optimism*, and *Creativity*. Students' bullying experiences relate negatively to their overall social and emotional skills (between $r=-0.234$ and $r=-0.103$). This work shows the importance of interactions taking place inside the classroom, where relationships, rather than instruction, play a significant role in students' social and emotional development. It aims to guide the daily practice of teachers in supporting their students' SEL development and to inform school administrations, local, and national public policy on how to best leverage school processes to support students' SEL.

Parental involvement and students' cognitive and behavioral engagement

Keywords: Engagement, Parental Involvement in Learning, Primary Education, Secondary Education

Presenting Author: Tania Vieites, Universidad Complutense de Madrid, Spain; **Co-Author:** Sara Fernández Devesa, Universidad de La Coruña, Spain; **Co-Author:** Maria Cabana Bedoya, Universidad de La Coruña, Spain; **Co-Author:** Susana Rodriguez, University of A Coruña, Spain

Parental Involvement is a fundamental element to consider, both due to its influence on students' progress and as a crucial pillar in collaborating with the school to achieve optimal results. However, to what extent does parental involvement affect students' cognitive and behavioural achievement? Cognitive achievement and behavioural achievement constitute, together with affective/emotional achievement, the academic achievement of students. The first concerns the extent to which students present attention and make a cognitive effort to understand what they are learning. Meanwhile, the second is defined in relation to the observable student behaviours regarding their participation in the teaching-learning process and completion of academic task. Thus, throughout this master's thesis, we will study to what extent the communication and support provided by families to their children at home, parental participation at school, and the type of parental involvement in homework affect children's cognitive behavioural engagement. For this purpose, a cross-sectional, correlational research will be carried out, implemented through questionnaires that will assess two of the three dimensions of academic engagement (cognitive and behavioural), on the one hand, and parental participation in school and involvement in school activities at home, on the other. The study involved pupils from the 4th year of Primary Education to the 4th year of Compulsory Secondary Education and their respective father and mothers. The results show the existence of a significant correlation between the promotion of cognitive engagement at home and the students' cognitive commitment to school. Parental involvement would not be directly linked to students' behavioural engagement at school. It is intended that the results of this work will contribute to improving the modes of parental involvement in a way that improves students' school engagement.

Session D 5

25 June 2024 16:00 - 17:30

Aula Máster 2

Single Paper

Assessment and Evaluation, Cognitive Science

Learning and Development in Early Childhood

Keywords: Achievement, Bilingual Education, Cognitive Skills and Processes, Conflict and War, Early Childhood Education, Engineering Education, Goal Orientations, Large-scale Assessment, Science and STEM, Self-regulated Learning and Behaviour

Interest group: SIG 05 - Learning and Development in Early Childhood

Chairperson: Theresa Bauer, Technical University of Munich, Germany

Bilingual Preschoolers' Executive Function, and its Relation to Self-regulated Learning.

Keywords: Bilingual Education, Cognitive Skills and Processes, Early Childhood Education, Self-regulated Learning and Behaviour

Presenting Author: Aleksandra Szczesny, Connecticut College, United States

While a considerable amount of research has been done on bilingualism and EF, the increase in immigration, which leads to more dual-language learners present in the classrooms, pushes us to understand the implications bilingual upbringing has on learning. To enhance the understanding of the impact of bilingualism on executive function (EF) and self-regulated learning (SRL), this study investigated whether bilingualism positively influences these EF skills and, consequently, enhances self-regulatory abilities in educational settings. The research involved 33 preschool children (15 bilinguals, 18 monolinguals) aged 36 to 61 months, who were assessed on their EF performance using the HTKS-R assessment (McClelland et al., 2018). Moreover, their classroom teachers evaluated their emotional, prosocial, cognitive, and motivational learning development through the CHILD 3-5 assessment (Whitebread et al., 2009). The results indicated no significant bilingual advantage in combined EF and SRL scores ($p = .38$). However, estimated marginal means suggested an emerging trend of better EF among bilinguals ($M = 27.72$) than monolinguals ($M = 20.34$). The study, acknowledging limitations such as a small sample size and uncertainties about bilingual proficiency, contributes to the understanding of bilingualism's impact on EF and SRL in early childhood, emphasizing the need for continued research to help increase cultural competency in education.

The impact of spatial skills on engineering in primary school children

Keywords: Cognitive Skills and Processes, Engineering Education, Goal Orientations, Science and STEM

Presenting Author: Jonas Schäfer, University of Kaiserslautern-Landau (RPTU), Germany; **Co-Author:** Timo Reuter, Rheinland-Pfälzische Technische Universität Kaiserslautern - Landau, Germany; **Co-Author:** Julia Karbach, Department of Psychology, University of Kaiserslautern-Landau, Germany; **Co-Author:** Miriam Leuchter, RPTU Landau, Germany

Spatial skills are essential cognitive abilities that enable children to handle their environment, e.g. by maintaining, manipulating, and mentally transforming visuospatial information of surrounding objects and persons. Engineering performance is considered crucial for children's STEM learning and therefore is targeted in early childhood intervention programs. However, little is known about the contribution of spatial skills to engineering performance in primary school children. In the present study, 460 first and second graders (age range: 6-8 years, $M = 7.40$, $SD = 0.64$) completed tests on their spatial skills (mental rotation, visuospatial working memory, and visuospatial short-term memory) and solved engineering tasks that required goal-directed constructing of gear carousels and attaching of propellers to gears. Data were collected on tablets by trained supervisors in schools. Structural equation models showed that spatial skills predicted both engineering efficiency and product quality. Regression analyses revealed that older children reached higher efficiency and higher product quality than younger children. The results suggest that engineering in six- to eight-year-old children considerably requires spatial skills. We conclude that memorizing locations, sizes, and features of task-relevant objects is an essential component of goal-directed engineering and that top-down engineering increases as a function of age.

(Re-)migration and international orientation as a resource for the participation of ECE in Kosovo

Keywords: Achievement, Conflict and War, Early Childhood Education, Large-scale Assessment

Presenting Author: Saranda Shabanxhaj, University of Graz, Institute of Education Research and Teacher Education, Austria; **Co-Author:** Heike Wendt, University of Graz, Austria

In Western countries, children with a migration background often have lower attendance rates in early childhood education (ECE). Deficit perspectives are frequently used to explain this and the educational inequalities that result. This study investigates educational inequalities in ECE attendance and mathematics achievement in Kosovo, a small country in south-east Europe that has been significantly impacted by war, unrest and economic instability over recent decades, forcing people to migrate. We use Bourdieu's theory of social reproduction to investigate the relationship between migration, family background and ECE attendance, and Boudon's theory of educational choice and concepts of hybridity and multilocality to explore the complexity and fluidity of migration processes. In the context of this resource-focused approach, we argue that migration-related hybridity and multilocality also represents an educational opportunity and can transform social origins, potentially mitigating educational inequalities in ECE attendance. To this end, we analyzed representative data of $N = 4496$ Kosovan fourth grade students and their parents. We found no significant difference in ECE attendance in relation to the immigration of at least one member of the nuclear family. But we did find a significant positive correlation between migration-related language practices/international orientation, and decisions to send children to ECE; these children also performed better in math and science at the 4th grade level. We discuss the implications of these factors for future research.

Session D 6

25 June 2024 16:00 - 17:30

Aula 4

Poster Presentation

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

Motivation and Self-regulation in Students and Teachers

Keywords: Attitudes and Beliefs, Classroom Management, Conceptual Change, E-learning / Online Learning, Example-based Learning, Experimental Studies, Feedback, Higher Education, In-service Teachers, Learning Strategies, Metacognition, Mixed-method Research, Motivation, Qualitative Methods, Resilience, Science and STEM, Secondary Education, Self-determination, Self-efficacy, Self-regulated Learning and Behaviour, Social Interaction, Teacher Professional Development

Interest group: SIG 08 - Motivation and Emotion, SIG 11 - Teaching and Teacher Education, SIG 14 - Learning and Professional Development, SIG 16 - Metacognition and Self-Regulated Learning

Chairperson: Ariadne Warmoes, Vrije Universiteit Brussel (VUB), Belgium

STEM Motivation at the End of the 8th Grade: A Latent Profile Analysis Approach

Keywords: Motivation, Science and STEM, Secondary Education, Self-determination

Presenting Author: Seppe Hermans, University of Antwerp, Belgium; **Co-Author:** Loan De Backer, University of Antwerp, Belgium; **Co-Author:** Peter Van Petegem, University of Antwerp, Belgium

This research scrutinized the STEM motivation of 505 eighth-grade students from 20 institutions using the Self-Regulation Questionnaire (SRQ) scales in conjunction with Latent Profile Analysis (LPA). The primary aim was to comprehensively understand the motivational landscape of students, particularly focusing on their interests, self-efficacy, and motivation within the STEM domain, while also delving into potential gender-based discrepancies. The findings unveiled three discernible motivational profiles: one exhibiting less favorable characteristics, another displaying moderate equilibrium, and a third portraying the most favorable attributes. Intriguingly, there was a noticeable gender disparity, with girls showing a lesser inclination towards the most favorable motivational profile. Furthermore, the study unearthed compelling associations between controlled motivation and other facets within these motivational profiles. However, these initial findings, while promising, necessitate further extensive analysis for conclusive insights. This research holds significance in unraveling the determinants of STEM motivation, potentially guiding educational strategies and future inquiries, particularly emphasizing the nuanced role of controlled motivation in shaping students' pursuits in STEM education.

Students' Misconceptions of SRL and Their Lack of Knowledge Hinder Their Use of SRL Strategies

Keywords: Conceptual Change, Example-based Learning, Learning Strategies, Self-regulated Learning and Behaviour

Presenting Author: Antonia Fischer, Goethe University Frankfurt, Germany; **Co-Author:** Charlotte Dignath, TU Dortmund University, Germany

Self-regulation of learning (SRL) is a key skill for academic success. Nevertheless, the majority of students only use few SRL strategies. The aim of the present study was to investigate the reasons for this and to analyze whether different SRL competencies of students predict their SRL strategy use. $N = 206$ social science students ($M_{Age} = 22.81$, 83% female) completed questionnaires on their knowledge of SRL, their beliefs about SRL, their self-efficacy beliefs about being able to use SRL strategies, their utility beliefs about SRL strategies, and their SRL strategy use. $N = 157$ students ($M_{Age} = 22.66$, 81% female) additionally participated in a complex problem-solving task in the laboratory. In this task, we assessed SRL strategy use in the learning process retrospectively in the form of a reflection protocol and specifically coded the use of planning, monitoring and cognition strategies based on a coding scheme by Greene and Azevedo (2009), so that we obtained an additional, more objective measure of SRL strategy use than the self-report questionnaire. Using regression, we found that students' self-efficacy beliefs and utility beliefs positively predicted SRL strategy use as measured by the self-report questionnaire. We further found that students' beliefs inconsistent with SRL theory predicted students' use of metacognitive and cognitive strategies in the problem-solving task. Students' knowledge of SRL further predicted their use of metacognitive strategies in this task. The results indicate the possibility of enhancing students' use of SRL strategies by promoting knowledge about SRL and changing beliefs.

Using retrieval practice during SRL: The effect of the SRL growth mindset intervention and feedback

Keywords: Attitudes and Beliefs, Feedback, Learning Strategies, Self-regulated Learning and Behaviour

Presenting Author: Jingshu Xiao, Erasmus University Rotterdam, Netherlands; **Co-Author:** Martine Baars, Radboud University Nijmegen, Behavioural Science Institute, Netherlands; **Co-Author:** Kate Xu, Open University of the Netherlands, Netherlands; **Co-Author:** Julian Roelle, Ruhr University Bochum, Germany; **Co-Author:** Roman Abel, Ruhr University Bochum, Germany; **Co-Author:** Fred Paas, Erasmus University Rotterdam/University of Wollongong, Netherlands

Using retrieval practice during self-regulated learning in higher education: The effect of the SRL growth mindset intervention and feedback This study investigated how SRL growth mindset intervention together with retrieval practice instructions and feedback can improve the self-regulated use of retrieval practice during university student's self-paced learning. We compared four conditions on their SRL growth mindset beliefs, use of retrieval practice, retrieval practice beliefs, mental effort ratings, and immediate and delayed recall performance. Participants in Condition 1 received the SRL growth mindset intervention

and feedback ($n = 42$); participants in Condition 2 received the control intervention and feedback ($n = 42$); Participants in Condition 3 received the SRL growth mindset intervention without feedback ($n = 42$); and participants in Condition 4 received the control intervention without feedback ($n = 42$). We expected that the best effect of helping students improve their growth mindset, use retrieval practice, belief of retrieval practice, performance on immediate and delayed recall, and reduce mental effort would be SRL mindset intervention with feedback (Condition 1). *Keywords:* Attitudes and Beliefs, Feedback, Learning Strategies, Self-regulated Learning and Behaviour

The role of teachers' agency in the relation between their motivation and school context perception

Keywords: In-service Teachers, Mixed-method Research, Motivation, Self-determination

Presenting Author: Carolina Petronilho, Institute of Education - University of Lisbon, Portugal; **Co-Author:** Sofia Freire, Institute of Education - University of Lisbon, Portugal

Despite studies highlighting teachers' demotivation and low job satisfaction, some teachers show highly motivated for their profession. Self Determination Theory poses that actions derived from the intrinsic pleasure of it or for the sake of attaining valued outcomes or as an expression of the self are associated with well-being and satisfaction. Considering that these actions are stimulated when autonomy, affiliation and competence needs are satisfied, it would be expected that, in contexts that promote the satisfaction of these needs, teachers would be more autonomously motivated and as such would show more satisfied with their profession. However, even in the same context, teachers vary in their motivation and satisfaction, suggesting the intervention of other individual mechanisms. Teacher agency is defined as the ability to act intentionally with a view to achieve desired outcomes. When facing situations that challenge their educational perspectives, agentic teachers initiate changes in the context to reach valued outcomes. Therefore, it would be expected that more agentic teachers would be more autonomously motivated for their profession and satisfied, even in contexts that limit their actions and decisions. To explore this relation, we applied a set of questionnaires to 253 teachers (91% female; mean of age 44 years old). The results suggest an association between a more negative perception of the context (such as low leaderships involvement and low collaboration between colleagues) and low motivation for the profession. Based on these results, following an extreme case sampling, ten teachers were selected for semi structured interviews to characterize their agency and how it affects their perception of the context and their motivation for the profession. Both results will be presented and discussed within the actual challenges of the teaching profession.

Revealing social dynamics in a dyadic collaborative discussion to promote teacher resilience

Keywords: Qualitative Methods, Resilience, Social Interaction, Teacher Professional Development

Presenting Author: Alba Vallés, University of Lleida, Spain; **Co-Author:** Marc Clarà, University of Lleida, Spain

This research explores the social dynamics that emerged in an intervention designed to enhance teacher resilience. In this study, teacher resilience is conceptualised as a dynamic phenomenon defined by positive changes in teacher's emotional experiences and practices. Teacher meanings about professional situations are a pivotal aspect of this phenomenon, since it is assumed that changes on teacher's emotional experiences and practices are related to transformations on these meanings. Building on this conceptualization, the intervention consisted of nine sessions, essentially based on discussions between a teacher and a researcher, aimed at transforming the teacher's meanings embedded in narratives about specific situations of her practice. A qualitative analysis based on the technique of Interactivity Analysis was carried out to explore how participants interact in terms of the shared task and their roles. The findings show an evolution on the nature of the interaction throughout the intervention. This evolution delineates four distinct stages: the introduction stage, the analysis stage, the transformation stage, and the evaluation stage. This study underscores the value of discussion in cultivating teacher resilience and provides guidance on how to organise discussions to transform meanings about teacher professional situations.

Does theoretical knowledge and cueing foster teacher noticing of disruptions and self-efficacy?

Keywords: Classroom Management, Experimental Studies, Self-efficacy, Teacher Professional Development

Presenting Author: Isabel Althen, German Institut for Adult Education, Germany; **Co-Author:** Jessica Fischer, German Institut for Adult Education, Germany; **Co-Author:** Martin Merkt, Deutsches Institut für Erwachsenenbildung, Germany

Classroom management is one of the most influential factors in teaching and learning. Noticing and managing disruptions is one aspect of classroom management. Successful classroom management is also closely connected with self-efficacy in this domain. In this study teachers in adult education will be trained to improve noticing of relevant classroom events that disrupt the learning process. One group will receive relevant information on classroom management and disruptions while the other group receives no relevant information. Then all participants will practice noticing with the use of video-based cases. One group will receive cues to support their ability to notice disruptions. Finally, participants' noticing skills will be tested with additional video-based cases that vary in the saliency of the disruptions and do not include cues in any of the conditions. The effect on the participants' self-efficacy will be measured through Teacher's Sense of Efficacy Scale (TSES) subsection classroom management and the participants' noticing will be tested through their ability to notice disruptions in video-based cases. If all goes according to plan, the study will be conducted in April 2024, so the data will be available for the conference.

The influence of parametrised tasks on learners' judgements of learning

Keywords: E-learning / Online Learning, Higher Education, Metacognition, Self-regulated Learning and Behaviour

Presenting Author: Theresa Walesch, University of Education Karlsruhe, Germany; **Co-Author:** Anja Prinz-Weiß, University of Education Karlsruhe, Germany; **Co-Author:** Carolin Baumann, University of Education Karlsruhe, Germany; **Co-Author:** Samuel Merk, PH Karlsruhe, Germany

In digital learning contexts, it is particularly important that learners accurately judge their own knowledge acquisition and decide which regulatory activities need to be initiated. Previous research has shown that learners' judgments of learning (JOLs) are often inaccurate, which can lead to suboptimal study decisions. Parametrised tasks are an innovative way to implement active retrieval practice. Parametrised tasks are dynamic, algorithmically generated exercises, in which relevant parameters are varied to create variation in the learning tasks. The varying parameters can be words, examples or numbers, while the topic or learning goal of the tasks remains the same. However, it is unclear to what extent parametrised tasks influence learners' JOLs and judgment accuracy as well as which further factors influence the relationship between parametrised tasks and JOLs and judgement accuracy. To shed light on this research gap, we will conduct a secondary analysis with data from 114 university students collected in a field study.

Session D 7

25 June 2024 16:00 - 17:30

Aula 11

Poster Presentation

Cognitive Science

Innovative Approaches in Early and Primary Education

Keywords: Action Research, Bilingual Education, Cognitive Development, Early Childhood Education, Educational Technologies, Inquiry Learning, Primary Education, Quantitative Methods, School Leadership, Self-efficacy

Interest group: SIG 05 - Learning and Development in Early Childhood, SIG 14 - Learning and Professional Development

Chairperson: Paula Barea-Arroyo, University of Seville, Spain

(In)Visible: 5-6-year-old children's exploration of human body in integral educational context

Keywords: Action Research, Early Childhood Education, Educational Technologies, Inquiry Learning

Presenting Author: Monika Kelpsiene, Vytautas Magnus University, Lithuania

Multiple documented studies on children's understanding of human body, such as the parts of the body and internal and external organs, research the difficulties that children experience in conceptualizing these phenomena. The functioning of human body could be better understood through hands-on activities. Shaping children's imagination, cognition and better understanding of human body system the possibility to interact (to touch, to spin, to zoom in and to zoom out) with

internal and external human organs and body parts and to see them popping out in 3D view have great importance. The purpose of this research is comparing the effect of educational context integrating augmented reality technology affordances (augmented reality T-shirts) and real-environment objects (puzzles, blocks, books and human body models) for teaching parts of human body to preschool children to improve their understanding on how human body is operating. Two-cycle action research was conducted, which determined what kind of exploration is encouraged in a child and what knowledge the activity helps to acquire in two different contexts: 1) in the context of augmented reality human body T-shirts and 2) in the integrated augmented reality tool human body T-shirts and in the educational context of real-environment objects. The data collection methods included observations (video recordings), interviews with the children before and after the activity and questionnaires to assess the knowledge acquired by the children. The chosen data analysis method was qualitative content analysis. The results of the research revealed that children achieve better educational results when integrated educational contexts are created, including the possibilities offered by augmented reality tools and real-environment affordances. These educational contexts enable children's self-directed, enquiry-based development of their knowledge and deeper understanding of the explored phenomenon.

Before or after. On the emergence of social, cognitive and language features associated with CLIL

Keywords: Bilingual Education, Cognitive Development, Early Childhood Education, Quantitative Methods

Presenting Author: Niels Planckaert, Ghent University, Belgium

Over the past few decades, CLIL has been implemented in numerous educational programmes. It has been profiled as simultaneously enhancing both foreign language proficiency and content knowledge (e.g. Luis Banegas, 2018). More recently, however, some have openly questioned the validity of these CLIL effects (e.g. Bruton, 2013). In this talk, we zoom in on the socio-economic selectivity of CLIL programmes. Furthermore, we will discuss language and cognitive abilities of CLIL students as opposed to monolingual students both before and after the onset of actual CLIL education. We address these topics both through an extended literature review and through a presentation of some of our own preliminary results. In our research project, we consider the development of 4- to 9-year-olds both in CLIL and monolingual education from a longitudinal perspective. Approximately 400 participants, subdivided into two age groups, are tested for three consecutive years on language (L1 and L2) and cognitive abilities, using well-established and standardized measures such as Raven's 2, WISC/WPSI and CELF. In presenting our findings, we want to distinguish between what is already there before the onset of CLIL education itself and what is possibly driven by the CLIL programme, from a socio-economic, from a cognitive and from a language perspective.

References

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A comparison of general self-efficacy and specific self-efficacy among Flemish primary principals

Keywords: Primary Education, Quantitative Methods, School Leadership, Self-efficacy

Presenting Author: Lore Bellemans, University Ghent, Belgium; **Co-Author:** Geert Devos, University of Ghent, Belgium

Self-efficacy refers to the extent to which individuals believe they can effectively achieve the goals they set for themselves. Self-efficacy beliefs play a central role in human functioning. They influence whether individuals set ambitious goals, how much effort they invest and how long they persist when facing difficulties and failures (Bandura, 1997). Although an increasing amount of research demonstrates the importance of self-efficacy among principals, little is known about the self-efficacy of principals. The main goal of this study was to better understand the relationship between general and specific self-efficacy. 981 principals in Flanders participated in an online questionnaire about their sense of self-efficacy. A comparative analysis was conducted. The results show that general self-efficacy and specific self-efficacy are separate constructs, both relevant to principals' self-image and related to both demographic, career-related and work-related variables. This study highlights the importance of paying attention to both general self-efficacy and specific self-efficacy of principals. Suggestions for further research, limitations and implications for training and supporting principals are discussed.

Keynote II 1

26 June 2024 09:30 - 10:30

Salón de Actos

JURE 2024 Keynote

Learning from multiple information sources: Challenges and potential advantages

Keywords: Cognitive Skills and Processes, Educational Challenges, Knowledge Construction, Learning Strategies

Interest group:

Chairperson: Madalin Deliu, University of Salamanca, Spain

Today's students are often exposed to numerous information sources when they work on learning tasks. For example, different kinds of inquiry tasks normally require students to search for and comprehend information sources of diverse kinds. While searching for information relevant to the assignment, they may come across information sources representing different genres, different interests, and presented in different communication channels. The multitude of information sources will obviously represent a challenge to students, e. g. considering trustworthiness and relevance, and integrating information across the sources. But what are the potential advantages, and what does it take to profit from using multiple sources? In this talk I will discuss both challenges and advantages of using multiple information sources when learning in academic contexts. The discussion will be based on research from the field of multiple document literacy and from multimedia learning.

Learning from multiple information sources: Challenges and potential advantages

Presenting Author: Helge I. Strømsø, University of Oslo, Norway

Today's students are often exposed to numerous information sources when they work on learning tasks. For example, different kinds of inquiry tasks normally require students to search for and comprehend information sources of diverse kinds. While searching for information relevant to the assignment, they may come across information sources representing different genres, different interests, and presented in different communication channels. The multitude of information sources will obviously represent a challenge to students, e. g. considering trustworthiness and relevance, and integrating information across the sources. But what are the potential advantages, and what does it take to profit from using multiple sources? In this talk I will discuss both challenges and advantages of using multiple information sources when learning in academic contexts. The discussion will be based on research from the field of multiple document literacy and from multimedia learning.

Session E 1

26 June 2024 11:00 - 12:30

Aula 1

Single Paper

Educational Policy and Systems, Higher Education

Inclusivity in Higher Education

Keywords: Achievement, Higher Education, Inclusive Education, Social and Educational Injustice, Social Interaction, Survey Research, Teaching / Instructional Strategies, Teaching Approaches

Interest group: SIG 04 - Higher Education

Chairperson: Zhuzhuna Gviniashvili, Åbo Akademi University, Finland

Implemented UD strategies and their effectiveness today: What works in higher education?

Keywords: Higher Education, Inclusive Education, Teaching / Instructional Strategies, Teaching Approaches

Presenting Author:Liesbet Saenen, Universiteit Hasselt, Belgium; **Co-Author:**Katrien Hermans, Hasselt University, Belgium; **Co-Author:**Katrien Struyven, Hasselt University - UHasselt, Belgium; **Co-Author:**Elke Emmers, Universiteit Hasselt, Belgium

Universal Design (UD) is a validated educational design framework that, by proactively planning and removing learning barriers, accommodates student variability. This systematic literature review (SLR) adhered to the PRISMA guidelines explores the implementation and effectiveness of UD strategies in fostering inclusive online and offline learning environments within higher education. Employing a search string, including 'universal design', 'inclusive learning environment', and various terms related to higher education, effectiveness, and non-traditional learning, the study scoured the databases Web of Science, ERIC, and Scopus. A narrative synthesis approach was utilized to concisely summarize findings, explore similarities and differences, and delve into the reported UD strategies and outcomes of empirical studies within the higher education context. This includes both traditional settings, characterized by offline classrooms, and non-traditional, fully online environments, as outlined by Pathak and Palvia (2021). This SLR included 14 studies with diverse methodologies. This SLR shows that despite reasonably comprehensive reporting, a prevalent abstraction and limited practical orientation, especially in qualitative studies, hinder measurability, leading to restricted conclusive findings on the effectiveness of UD in higher education. The research provides valuable insights into the effectiveness of UD in diverse learning environments and reveals implementation strategies, challenges, and success factors in both traditional and online contexts. These insights provide more practical guidance for future research and policy initiatives aimed at enhancing specific areas and increasing the practical effectiveness of UD in varied educational environments.

Students' Sense of Belonging and Authenticity in Dutch Higher Education

Keywords: Achievement, Higher Education, Inclusive Education, Survey Research

Presenting Author:Anne-Roos Verbree, University Medical Center Utrecht, Netherlands; **Co-Author:**Marieke van der Schaaf, University Medical Center Utrecht / Utrecht University, Netherlands; **Co-Author:**Leoniek Wijngaards-de Meij, Utrecht University, Netherlands; **Co-Author:**Gönül Dilaver, University Medical Center Utrecht, Netherlands

Sense of belonging entails students' comfort level in the classroom and experienced faculty and peer support. Currently, it remains unclear which student groups may have lower levels of belonging and whether these disparities extend to students' authenticity, or perception they can be true to themselves. Investigating these aspects is crucial, as a diminished sense of belonging can hamper academic performance. This research employs a survey design to examine student differences in sense of belonging and authenticity at a Dutch university. Differences were examined by gender, sexual orientation, ethnicity and nationality, religion, disabilities, extracurricular involvement, parental education, prior education, study year, and school. We also examined whether belonging and authenticity were related to students' self-reported academic performance. Our sample ($N = 4,473$) consisted of Dutch undergraduate and graduate students. Data analysis employing Structural Equation Modeling showed that male students felt more comfortable in the classroom and students with disabilities experienced less sense of belonging and authenticity than their peers. Extracurricular involvement enhanced students' belonging and authenticity. Being part of multiple minority groups impaired aspects of students' belonging and authenticity. Sense of belonging and the experienced room for authenticity positively and independently predicted students' self-reported performance. We conclude that fostering both belonging and authenticity is crucial for all students, but especially for minority students. We suggest educators to foster students' sense of belonging and authenticity, which can enhance academic performance and promote educational equality and opportunities for all students. Stimulating extracurricular involvement is promising to contribute to this goal.

Doing the heavy lifting: The experiences of working-class professional service staff

Keywords: Higher Education, Inclusive Education, Social and Educational Injustice, Social Interaction

Presenting Author:Jess Pilgrim, University of Bristol/University of Oxford, United Kingdom

Understanding what life is like for working-class people studying and working within UK universities has been of increased interest to higher education research, policy and practice over the past 15 years. Research has sought to understand the lives of people from different backgrounds as they enter universities; students from working-class backgrounds have featured heavily in academic discourses, and recent reflections have begun to understand the intersectionality between ethnicity and social class background (Bhopal & Myers, 2023). What has been lost so far in this myriad of brilliant research is the limitation that the *experience* of working and studying in universities in the UK is restricted to academics and students. Professional services staff are understood by their *function*, having absent voices within UK academic research (Whitchurch, 2010). Where their experiences are counted, they relate solely to professional identity (Caldwell, 2022). This paper presents findings from doctoral thesis research. It seeks to understand the experiences of working-class professional services staff in UK Russell Group universities. It argues that we cannot understand how culture, norms, behaviours and practices are experienced, and subsequently how we can create equitable institutions, if we fail to include this key area of the workforce.

Session E 2

26 June 2024 11:00 - 12:30

Aula 4

Single Paper

Motivational, Social and Affective Processes, Teaching and Teacher Education

Teacher Challenges and Support

Keywords: At-risk Students, Burnout, Experimental Studies, Psychology, Quantitative Methods, Self-determination, Social Aspects of Learning and Teaching, Vocational Education and Apprenticeship Training, Well-being

Interest group: SIG 08 - Motivation and Emotion, SIG 10 - Social Interaction in Learning and Instruction, SIG 11 - Teaching and Teacher Education

Chairperson: Moonika Teppo, University of Tartu, Estonia

Practising Strengths, Weaknesses, or Both: Where Should Education Head?

Keywords: Experimental Studies, Psychology, Self-determination, Well-being

Presenting Author:Boseok Kim, University of Cambridge, United Kingdom

This study explored the effects of educational interventions focusing on character strengths on student wellbeing operationalised as Basic Psychological Needs Satisfaction (BPNS) and subjective wellbeing. The study considers individual differences in school adjustment as a potential moderator. The study recruited 549 fifth and sixth graders from two primary schools in South Korea and randomly assigned them to one of four conditions: practising strengths, improving weaknesses (areas for improvement), integrating both, or an active control group that underwent an emotion-focused intervention. The interventions consisted of a one-time workshop followed by a seven-day self-guided practice. The results showed a significant interaction effect between the improving weakness intervention and school adjustment on all BPNS measures, even after controlling for pre-intervention BPNS scores. The intervention had a more positive effect on autonomy and competence needs satisfaction for students with low school adjustment compared to the active control group. However, no significant effects were found for subjective wellbeing. These findings suggest that improving weaknesses may be an effective and dynamic solution for enhancing student eudaimonic wellbeing and positive development, especially for those with low school adjustment. The study challenges the prevailing assumption that using strengths is always better. This research advocates for educational practices that actively assist students in identifying and developing their weaker character strengths, especially among those facing challenges in school adjustment.

Challenges of Teachers in Vocational Schools: Effects on Well-Being, Job Satisfaction and Burnout

Keywords: Burnout, Quantitative Methods, Vocational Education and Apprenticeship Training, Well-being

Presenting Author:Nina Marlene Sarochan, University of Mannheim, Germany; **Co-Author:**Max S. Lohner, University of Mannheim, Germany; **Co-Author:**Carmela Aprea, University of Mannheim, Germany

Teachers in vocational schools are confronted with many challenges daily, which can have a negative impact on their mental and physical health as well as their work experience. As their working life has not been considered much in research to date, the goal of this study is to contribute to closing this gap. To gain a better understanding of the challenges for teachers in vocational schools and provide targeted support, it is essential to identify these challenges and their consequences in a differentiated manner. In line with these considerations, this study addresses the following research questions: (1) What types of challenges do teachers in vocational schools perceive as particularly pronounced in their day-to-day work? (2) What effects do these challenges have on their well-being, job satisfaction and risk of burnout? (3) Do personal resources and support from private environment, and job resources such as support from school management and colleagues mediate the relationship between job demands and outcomes?

To answer these questions, we draw on data from an online survey conducted in Germany from February to November 2022. 1,470 vocational school teachers were asked about the perceived frequency of 24 challenges from 7 categories as well as their tendency to burnout, their well-being and their job satisfaction using closed items. Descriptive, regression and mediation analyses were conducted with this data set.

The descriptive analyses showed that heterogeneity in performance prerequisites is the most prominently perceived challenge in teachers' daily work. Furthermore, regression analyses demonstrated that the challenges teachers perceive are negatively associated with teacher well-being and job satisfaction and positively associated with the risk of burnout. Finally, the mediation analyses showed that the personal resource "ability to recover from stress" and support from private environment are significant mediators of the relationships between challenges and all of considered outcomes.

Absent students' teacher social support profiles

Keywords: At-risk Students, Quantitative Methods, Social Aspects of Learning and Teaching, Well-being

Presenting Author:Suvi Kanerva, University of Helsinki, Finland; **Co-Author:**Risto Hotulainen, University of Helsinki, Finland; **Co-Author:**Sanna Oinas, University of Helsinki, Finland

This unfinished paper investigates the phenomenon of teacher social support perceived by students with problematic absences. The aim of this paper is to find out how many teacher social support profiles can be found from the data, which covariates predict profile memberships in specific profiles, and how outcomes like academic achievement differ across profiles. Participants (N=7,464) in the study come from a large-scale nationally representative research project called Schooling, teaching, and well-being in the school community during the COVID-19 pandemic. The data collected during Spring 2021 consist of students' self-reported survey answers and is cross sectional. The level of perceived teacher social support was investigated using the Child and Adolescent Social Support Scale (Malecki et al., 2000) for teacher support. The methods are quantitative, and the approach is person centered. Latent profile analysis in MPLUS is used to explore the profile solutions, one-step and R3STEP methods (Vermunt, 2010) are used to investigate the predictor variables, and BCH method (Vermunt, 2010; Bakk et al., 2013) is used to compare outcomes across profiles. Preliminary analyses show that a three-profile solution can be found. These profiles are 'low support', 'moderate support', and 'high support'. Membership in 'low support' profile is predicted by older age, loneliness, lower academic achievement, and higher absenteeism compared to 'high support'. Similarly, having low support was connected to lower grades, loneliness, and regular somatic symptoms as outcomes. Interestingly gender or mother's education level didn't predict profile memberships. These results leave us with a question: Could teacher social support be the key to decreasing adverse effects of absenteeism or even preventing absences?

Session E 3

26 June 2024 11:00 - 12:30

Aula Máster 1

Single Paper

Teaching and Teacher Education

Teaching Approaches in Science and STEM

Keywords: Curriculum Development, Early Childhood Education, Inquiry Learning, Lifelong Learning, Mathematics / Numeracy, Science and STEM, Science Education, Teacher Professional Development, Teaching / Instructional Strategies, Teaching Approaches

Interest group: SIG 05 - Learning and Development in Early Childhood, SIG 11 - Teaching and Teacher Education, SIG 14 - Learning and Professional Development

Chairperson: Miriam Rivero-Contreras, University of Extremadura, Spain

Can Students Apply Scientific Method in Science Projects: Document Analysis and Interviews Insights

Keywords: Inquiry Learning, Science Education, Teaching / Instructional Strategies, Teaching Approaches

Presenting Author:Venance Timothy, University of Dar es Salaam, United Republic of Tanzania

Teachers assign students to conduct projects as a strategy to facilitate learning of science in secondary schools. In these projects, students are expected to apply the scientific method to generate knowledge. This study examined students' application of the scientific method while conducting projects. Its data was collected by reviewing project reports written by science students to find out how they applied the scientific method in their projects. Also, teachers and students were interviewed to obtain more insights into the way secondary school students conduct their projects. Using descriptive statistics, principal component analysis, and content analysis techniques, the results indicated that students are not able to appropriately apply the scientific method in conducting their projects. Meanwhile, little time for conducting projects, a lack of support from teachers during data analysis and report writing, and poor research skills among students are challenges that hinder effective conduction of most projects. The study recommends that students' projects should be used not only as part of summative assessment or as a requirement for completing secondary education, but also as an independent learning strategy.

Teacher Professional Development in STEAM Education: design principles, research trends and topics

Keywords: Lifelong Learning, Science and STEM, Teacher Professional Development, Teaching Approaches

Presenting Author:Juliana Abra Olivato, ISPA-Instituto Universitário (CIE - Center for Research in Education), Portugal; **Co-Author:**José Castro Silva, ISPA-Instituto Universitário, Portugal

The adoption of the STEAM educational approach (Science, Technology, Engineering, Arts and Mathematics) is on the rise in schools, research initiatives, projects, and teacher training programs. Considering the relatively recent nature of the topic and the limited number of systematic reviews addressing STEAM education, which is further reduced when dealing with STEAM-focused teacher professional development, the paper aims to describe the state of the art regarding the professional development of teachers in STEAM education, in a general and global way, conducting background research in the area, offering a comprehensive and global overview. To achieve this objective, it was conducted a review of the literature in specialized journals and reports, and a comprehensive mapping of the area highlights key insights found in the current scientific literature. This insight encompass: 1) design principles for teacher professional development programs in STEAM education; 2) the diverse types of professional development programs that have been implemented and evaluated; 3) an exploration of current topics in these trainings' initiatives along with presumed trends. This study additionally details the models of teacher training in STEAM, particularly in the European Union unfolding through pertinent projects. Some challenges are informed by reports and present some of pillars such as the use of technology in learning, problem-solving, creativity and critical thinking in teacher training. It further explores the requisite adjustments needed to align with evolving educational landscapes and emerging realities. Research indicates that teachers value STEAM, however, they often perceive a gap in their initial training and professional development to integrate interdisciplinary and innovative approaches into their teaching practices. Within the framework of strategies and initiatives aimed at empowering teachers to effectively implement STEAM curricula, some pillars already established by advances in educational research will be discussed in this paper with implications to the field.

CANCELLED: Boosting Children's STEM Learning and Preschool Teacher Competencies (...)

Keywords: Curriculum Development, Early Childhood Education, Mathematics / Numeracy, Teacher Professional Development

Presenting Author:Lukas Schmitt, RPTU Kaiserslautern-Landau, Germany; **Co-Author:**Anke Maria Weber, University of Luxembourg, Luxembourg; **Co-Author:**Miriam Leuchter, RPTU Landau, Germany

Please note that this presentation has been cancelled, due to unavailability of the presenter to travel to Sevilla.

Preschool teachers play a crucial role in fostering children's early STEM-learning in everyday situations. One such situation is block play, which provides the opportunity to develop children's numeracy and their understanding of stability. However, research has shown that preschool teachers lack science- and math-specific competencies to identify everyday learning opportunities and to scaffold children's learning. In this study, we applied a pre-post-design and examined whether a teacher training with a block play curriculum improved preschool teachers' content knowledge (CK), pedagogical content knowledge (PCK), and their scaffolding in block play. Teachers were assigned to three experimental conditions (EG1: training encompasses theoretical input and modelling of scaffolding with the curriculum materials, EG2: training encompasses theoretical input with the curriculum material, CG: no training, no curriculum). We analysed preschool teachers' CK, PCK and scaffolding before and after the training in episodes of free block play, and guided block play with the curriculum materials. Besides, children's numeracy and understanding of stability were tested three weeks before and after the teacher training. We found no change in teachers' knowledge, however, both training groups applied more scaffolding in the post-test compared to the control group. During guided play with the curriculum materials, EG1 used more scaffolding than EG2. Children's understanding of stability did not change throughout the course of the study, but children in the EG1 showed significant improvements in numeracy from pre- to post-test. The study demonstrates that implementing a block play curriculum enhances the ability of preschool teachers to support children's learning through scaffolding, and children's mathematical abilities. **Keywords:** Curriculum Development, Teacher Professional Development, Early Childhood Education, Mathematics/Numeracy **SIG 05: Learning and Development in Early Childhood**

Session E 4

26 June 2024 11:00 - 12:30

Aula Máster 2

Single Paper

Cognitive Science, Learning and Instructional Technology

Immersive Technologies and AI

Keywords: Artificial Intelligence, Computer-assisted Learning, Educational Neuroscience, Educational Technologies, Game-based Learning, Higher Education, Immersive Technologies for Learning, Motivation, Primary Education, Science Education

Interest group: SIG 04 - Higher Education, SIG 07 - Technology-Enhanced Learning And Instruction

Chairperson: Peiyu Wang, University of Nottingham, United Kingdom

Digital Escape Games and Memory: Exploring their Impact on Theta Oscillations in the Hippocampus.

Keywords: Educational Neuroscience, Educational Technologies, Game-based Learning, Immersive Technologies for Learning

Presenting Author: Thomas Frøsig, Université Côte d'Azur, France

Digital Escape Games and Memory: Exploring their Impact on Theta Oscillations in the Hippocampus.

Thomas B. Frøsig, Université Côte d'Azur

It has been well established in the literature that Hippocampal Theta Oscillations play a significant role in learning, notably in supporting memory encoding, as well as retrieval. And because these oscillations can be triggered by visually exploring a novel environment, which is the core gameplay of escape games, be it analog or digital, this exploratory study decided to build a digital escape game (DEG) and measure whether or not an increase in Hippocampal Theta Oscillations could be detected when participants were exploring the DEG, compared to participants reading a text on a computer screen and participants playing a commercial first-person shooter game. The participants (n=23) were randomly divided into three activities, all lasting 3 min.:

(i) reading a text on a computer screen

(ii) playing a digital escape game (DEG)

(iii) playing the first-person shooter game Counter Strike Global offensive. During the activity their brain activity was measured with Electroencephalography (EEG), focusing on Hippocampal Theta Oscillations. The gathered results showed that a digital escape game in 3D, played without a set task or prior knowledge was able to trigger Hippocampal Theta Oscillations and produce positive correlations between Perceived Usefulness and Memory Encoding, as well as between Concentration and Memory Encoding. While the first person shooter game showed near zero and negative correlations in both of these values. So it looks likely that the positive correlations are not only a result of the DEG being a 3D game, but rather that it is a combination of a 3D game and the chosen gameplay of escape games. This positive result shows a promising direction for continued research in the use of digital escape games in an educational setting.

Enhancing Primary Education: The Impact of Virtual Reality on Learning about the Water Cycle

Keywords: Computer-assisted Learning, Immersive Technologies for Learning, Primary Education, Science Education

Presenting Author: Josua Dubach, PHBern, University of Teacher Education, Switzerland; **Co-Author:** Sebastian Tempelmann, Institute for Research, & Development, Germany; **Co-Author:** Corinna Martarelli, Distance Learning University Switzerland, Switzerland; **Co-Author:** Trix Cacchione, University of Teacher Education FHNW (PH FHNW), Switzerland

Comprehending scientific structures and processes, especially those that are inaccessible, can be challenging, particularly for children who rely on experiential learning to grasp new concepts. Virtual Reality (VR) technology offers a novel approach to make these concepts more tangible through immersive and interactive learning experiences. This study examines the effectiveness of a VR learning environment in primary school settings, with a focus on the roles of immersion and interaction in improving educational outcomes. The study involved 165 students aged 11-12 years and employed an 11-session VR curriculum to evaluate the impact on their understanding of the water cycle. Using a 2x2 factorial design, the study varied immersion levels (headset vs desktop VR) and interaction modes (direct manipulation vs avatar-guided actions). The findings indicated a significant improvement in learning outcomes due to immersive experiences, while the interaction type did not have a similar effect. It is worth noting that students who used VR headsets showed better performance immediately after the intervention and maintained this advantage during an 8-week follow-up, compared to their peers who used desktop VR. The study also evaluated different affective and cognitive parameters, such as perceived presence, cognitive and physical load, and student satisfaction. These findings highlight the potential of VR as a transformative tool in science education, indicating avenues for future research and application.

Exploring Hong Kong first-year University students' use of GenAI tools

Keywords: Artificial Intelligence, Educational Technologies, Higher Education, Motivation

Presenting Author: Jin Huang, The Hong Kong Polytechnic University, Hong Kong

Generative AI (GenAI) such as ChatGPT has been disruptive in the teaching and learning of tertiary education. Understanding students' view on using GenAI tools for learning purposes can effectively inform educators and policy makers on guiding students towards responsible and effective use of them. This research aims at exploring the usage, attitudes, and motivations towards using GenAI tools for studying purposes among a group of first-year university students in Hong Kong. Descriptive and inferential statistics were used to analyse 71 survey responses. Results indicate that despite limited current usage, students hold a generally positive attitude towards GenAI's use for studies, with mixed motivational factors including strong belief in the tool's benefits. An overall heightened awareness of risks associated with these tools including cheating, overreliance, and being against the purpose of learning is also observed. The findings underscore the importance of addressing major student concerns through clear guidelines and tailoring strategies to their varied motivations to promote responsible and effective use of GenAI tools in education.

Session E 5

26 June 2024 11:00 - 12:30

Aula 5

Poster Presentation

Assessment and Evaluation, Culture, Morality, Religion and Education, Instructional Design, Learning and Instructional Technology, Learning and Social

Learning Strategies and Teacher Support in Primary Education

Keywords: Assessment Methods, Classroom Assessment, Comprehension of Text and Graphics, Computer-assisted Learning, Engagement, Metacognition, Mixed-method Research, Pandemic, Parental Involvement in Learning, Primary Education, Problem Solving, Qualitative Methods, Reading, Self-regulated Learning and Behaviour, Social Interaction, Student Drawings

Interest group: SIG 06 - Instructional Design, SIG 07 - Technology-Enhanced Learning And Instruction, SIG 10 - Social Interaction in Learning and Instruction, SIG 16 - Metacognition and Self-Regulated Learning

Chairperson: Stefan Hanus, University of Regensburg, Germany

Parenthood in crisis - parents' perception of their role at school during the Corona pandemic

Keywords: Engagement, Pandemic, Parental Involvement in Learning, Primary Education

Presenting Author: Alicia Göthe, Universität Erfurt, Germany

The declaration and continuation of an epidemic situation as a result of the spread of the SARS-CoV-2 coronavirus led to enormous disruption and coping efforts in almost all areas of society in Germany in 2020 and 2021. Parents were faced with particular challenges due to the discontinuation of face-to-face teaching and the far-reaching shift of school education to the home (Bujard et al., 2020). Previous findings suggest that parents experienced an increase in stress, conflicts over work-life balance and helplessness (Geissler et al., 2022; Buschmeyer et al., 2021). However, it is unclear which indicators led to this increase in perceived stress in school-based care by parents. There is also a lack of data that retrospectively visualizes the entire period of the corona pandemic and thus also changes in parental stress experience, developments in coping strategies and cooperation between educational institutions and parents. This research project addresses these deficits and is dedicated to the question of how parents perceive their role in the school context during the coronavirus pandemic. The study aims to provide missing qualitative data with the help of a retrospective interview study with parents and evaluate it using the methodological approach of grounded theory. Based on this data, a family-oriented analysis of the education system under the conditions of the corona pandemic will be carried out, which will contribute to the discourse on the extent and limits of parental responsibility in the school education of their children, which is essential for achieving equal opportunities in education.

What do primary school students do, say and think in the process of understanding a text?

Keywords: Assessment Methods, Primary Education, Reading, Self-regulated Learning and Behaviour

Presenting Author: Valentina Ronqui, Universidad Católica del Uruguay, Uruguay; **Co-Author:** Daniel Trías, Universidad Católica del Uruguay, Uruguay; **Co-Author:** Juan Antonio Huertas, Universidad Autónoma de Madrid, Spain

Self-regulation has a positive impact on learning and academic achievement, but due to its nature it is difficult to assess it in a valid and reliable manner. This study aims to explore the validity of three self-regulation assessment methods in text comprehension tasks (questionnaire, think-aloud and traces) as well as to identify the variables associated with reading performance. For this purpose, individual sessions were conducted with 96 sixth-grade primary education students, who were asked to read a text and complete two reading comprehension tasks working in a virtual environment. Task traces were recorded, think-aloud was recorded and coded, and participants answered a self-report questionnaire about the processes used. A limited relationship was found between self-regulation measured by means of the questionnaire, think-aloud and traces, and the relationship between think-aloud and traces was moderate. Regarding the factors related to text comprehension task performance, think-aloud and task time measurements were found to be better predictors of performance than the questionnaire.

The effect of visual reasoning on arithmetic word problem solving

Keywords: Comprehension of Text and Graphics, Primary Education, Problem Solving, Student Drawings

Presenting Author: Ana-Maria Purcar, Babes-Bolyai University, Romania; **Co-Author:** Muşata-Dacia Bocoş, Babes-Bolyai University, Romania; **Co-Author:** Alexandra-Lucia Pop, College of Tourism Services "Napoca", Romania

Understanding and solving arithmetic word problems are often difficult tasks for first-grade pupils because of their underdeveloped reading comprehension abilities. Even so, many pupils tend to solve problems they don't understand by employing arbitrary strategies, such as randomly combining numbers existing in the problem into mathematical operations suggested by specific keywords in the problem (Schoenfeld, 1991). Research evidenced that visual reasoning in mathematics employs visual mental representations of mathematical relationships as an analytic thought process on the way to obtaining problem-solution (Elia & Philippou, 2004). In this respect, Glenberg et. al (2012) enhanced primary school pupils' comprehension of word problems by helping pupils to form appropriate mental representations when physically manipulating objects that recreated the problem situation. Other researchers (Dewolf et. al, 2017) investigated the effects of representational illustrations that accompanied the word problems in helping pupils to imagine the problem situation and solve the problem by enhancing more real-life knowledge afterwards. The current study investigates the effect of first-grade pupil-drawn visual representations of problem situation, on comprehending problem situations, and on the number of correct problem solutions provided by the subjects. In the *normal context* of a usual mathematics class, 45 first graders received an individual paper-and-pencil task. In *visual context*, pupils had to solve a problem similar to the one from the *normal context*. After reading and illustrating the problem situation by drawing, pupils had to perform mathematical operations to determine the problem solution. Findings show that most participants correctly represented the problem situations by drawing, therefore demonstrating comprehension of the problem situation, but about half of them failed to determine the numeric solution of the problem. However, the number of correct problem solutions determined in *visual context* increased compared to the number of correct problem solutions determined in *normal context*.

An integrated digital-paper intervention to enhance math skills through Executive Functions.

Keywords: Computer-assisted Learning, Mixed-method Research, Primary Education, Problem Solving

Presenting Author: Silvia Della Rocca, University of Florence, Italy; **Co-Author:** Costanza Ruffini, University of Florence, Italy; **Co-Author:** Camilla Chini, University of Florence, Italy; **Co-Author:** Giulia Lombardi, University of Florence, Italy; **Co-Author:** Annarita Monaco, University of Florence, Italy; **Co-Author:** Sara Campana, University of Florence, Italy; **Co-Author:** Chiara Pecini, University of Florence, Italy

Recently, interventions targeting cognitive control processes like Executive Functions (EF) were experimented to enhance early math skills, showing significant effects on the development of math skills in preschool and school-age children. This pilot study assessed the feasibility and effectiveness of an intervention with an integrated digital-paper procedure among second-grade students (Total: 104 children; Trained Group: n=58, Mean age=7.24, SD=.43; Control Group: n=46, Mean age=7.33; SD=.45). The 8-week training involved both home-based research-designed digital exercises for EF training and school-based paper activities to promote problem-solving. School activities were conducted following a collaborative learning approach, while home-based activities were individually administered through a digital learning app. Feasibility has been evaluated as the practicality and likelihood of successful implementation of the intervention, as assessed by teachers and children, in their daily routines. To assess training's efficacy, pre- and post-training assessments with the same tasks evaluating outcome measures were conducted in the first and last 2 weeks respectively. Text produced in problem-solving tasks were coded and assessed with a research-designed grid for the assessment of problem-solving skills.

As a feasibility feature, teachers of TG participated in interviews conducted before and after the intervention, which has been perceived highly appreciated and practical, aligning with the classical school curricula. The Trained Group showed enhanced behavioural self-regulation, math abilities, and problem-solving compared to the Control Group. Notably, benefits were higher in children with high working memory within the Trained Group. Furthermore, TG exhibited improvements in problem-solving tasks, as problem text comprehension, answer argumentation, integration of oral and written responses, as well as control cognitive processes and decision strategies.

Development of self-regulated learning in the transitional period from primary to secondary school

Keywords: Metacognition, Mixed-method Research, Primary Education, Self-regulated Learning and Behaviour

Presenting Author: Jovita Matulaitienė, Vytautas Magnus University, Lithuania; **Co-Author:** Lina Kaminskienė, Vytautas Magnus University, Lithuania; **Co-Author:** Erno Lehtinen, University of Turku, Finland

The transition from primary to secondary school influences students' further academic aspirations in later learning levels. The attitudes of teachers and students towards teaching and learning have important implications for coping with the learning challenges in the transitional period from grade 4 to grade 5 in the Lithuanian education system. In the last decades, the teachers' role in education has changed, as they have changed from transmitters of knowledge to organizers of the educational process. By organizing active and inclusive teaching, teachers are increasingly guided by metacognitive teaching strategies in the educational process which promote self-regulated students learning. This study investigates teachers' attitudes towards self-regulated learning and metacognitive strategies in primary and lower-secondary education and how self-regulated and metacognitive skills help students to cope with learning challenges during the transitional period. The participants of this study are fourth graders (n=253) and their class teachers (n=16). All participants completed closed-ended questionnaires and, in addition, teachers were invited to interviews for a deeper analysis. Using a cluster analysis method, two clusters of teachers and three clusters of students were identified. The clusters differed in their teaching and learning attitudes, applied self-regulated teaching/learning strategies, metacognitive teaching/learning strategies. The comparison of learners and teacher profiles within the clusters showed differences in teaching and learning strategies, students' self-evaluation, use of learning strategies at home and in the classroom, management of learning environment and teacher's help.

Student support in primary school – New insights on student-teacher-interaction

Keywords: Classroom Assessment, Primary Education, Qualitative Methods, Social Interaction

Presenting Author: Lukas Nebel, Pädagogische Hochschule Freiburg, Germany

The interaction between teachers and students is a crucial factor for the quality of teaching and student achievement. However, little research focuses on the interaction of teachers in learner-centered learning phases. These interactions represent complex layered switching points in the teaching and learning process. More and more students attend school with different backgrounds and learning conditions, so schools have to adapt to these different requirements in an appropriate manner. One answer to this problem is to implement learning phases in which students work independently, thus supporting their learning processes individually. This implies that research models and analytical frameworks developed for "traditional" teacher-centered lessons, need to be adapted to these individualized lessons, too. The goal of this research is to take a profound look at these interactions between teachers and students based on an appropriate theoretical and analytical framework, derived from teaching quality. The leading research question is, whether those interactions represent important aspects of teaching quality in a nutshell (e. g. cognitive activation, constructive support of students, classroom management) and how those aspects can be identified in student-teacher-interactions.

To capture the complexity of student-teacher-interactions in student-centered learning phases, video recordings of primary school lessons were used. First results on a newly developed coding scheme, the complex layers of student-teacher-interaction visible in the captured interactions and possibilities to support these interactions will be presented and discussed at the JURE conference.

Session E 6

26 June 2024 11:00 - 12:30

Aula 11

Poster Presentation

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

Best of JURE - Poster

Keywords: Artificial Intelligence, Competencies, Economics of Education, Educational Challenges, Educational Technologies, Feedback, In-service Teachers, L1 / Standard Language Acquisition, Migrant / Refugee and Minority students, Mixed-method Research, Primary Education, Quantitative Methods

Interest group: SIG 07 - Technology-Enhanced Learning And Instruction, SIG 18 - Educational Effectiveness and Improvement, SIG 21 - Learning and Teaching in Culturally Diverse Settings

Chairperson: Alba Vallés, University of Lleida, Spain

Teacher for life? Quantitative research into the retention of first and second career teachers

Keywords: Economics of Education, Educational Challenges, In-service Teachers, Quantitative Methods

Presenting Author: Jacob Van Belle, KU LEUVEN, Belgium; **Co-Author:** Mike Smet, KU Leuven, Belgium

Flanders faces great and growing teacher shortages within the entire compulsory education system. One of the reasons thereof is early attrition from the profession. Although extensive research on teacher attrition has been conducted, there is a need for research accurately tracking attrition decisions, as a large part of studies measure attrition intention instead of only measure attrition at an arbitrarily chosen moment. In addition, research based on factual data is warranted, to complement studies into career choices that focus more on the role of psychological processes (e.g. motivation). In recent years, policy measures have been aimed at second career teachers (SCT's), as they are considered a promising group to address the shortages. However, before they can be considered a solution, more longitudinal research is necessary to understand their attrition rates and contributing factors. This study investigates when teachers leave the profession and what characteristics on personal (e.g. gender, study success, study grant), job (e.g. duration of assignments, tenure status, educational level), and school level (e.g. experience of the school team, SES composition) influence that decision. In addition, this study investigates if the moment of attrition differs between first career teachers (FCT's) and SCT's and whether different characteristics influence the attrition decision. Data from administrative databases are analyzed through survival analysis, using Kaplan-Meier and Cox Proportional Hazard frailty models. Separate models are computed for FCT's and SCT's. Preliminary analyses show that SCT's have a significantly lower survival rate than FCT's. Moreover, different background characteristics influence the retention of FCT's differently than that of SCT's (e.g. nationality, prior higher education trajectory). This suggests that both groups require different policy approaches. Further analyses will be carried out during January and February 2024, leading to further insight into objective determinants of (early) attrition from the teaching profession.

Conditions of competent bilingualism of primary school children in Germany

Keywords: Competencies, L1 / Standard Language Acquisition, Migrant / Refugee and Minority students, Primary Education

Presenting Author: Lisa Tinkl, Humboldt-Universität zu Berlin; Berlin Institute for Empirical Integration and Migration Research (BIM), Germany; **Co-Author:** Aileen Edele, Humboldt-Universität zu Berlin; Berlin Institute for Empirical Integration and Migration Research (BIM), Germany; **Co-Author:** Birgit Heppt, Humboldt-Universität zu Berlin, Germany

This secondary analysis investigates early primary school children in Germany and the conditions of becoming a competent bilingual, i.e., having high levels of competence in both languages. In Germany, a high share of children with heritage from Turkey or the former Soviet Union grow up bilingually with German as the majority language (MaL) and Turkish or Russian as the minority language (MiL). Drawing on Bronfenbrenner's bioecological model (1979) and Montrul's framework of interrelated factors of heritage language acquisition and proficiency (2016), we assume varying language competence levels among bilingual children, resulting from individual preconditions and diverse language use in different contexts (individual, family, and institutional). Using data of the NEPS, we examined a sample of $N = 200$ Russian-speaking and $N = 135$ Turkish-speaking pupils who participated in a MaL early reading competence test and a MiL listening comprehension tests in Grade 2.

Based on latent profile analysis (LPA), we identified two distinct profiles in each bilingual group: the Russian sample is characterized by high competences in MaL and MiL within one profile (*Profile 1R: Competent Bilinguals*) and by average competences in both languages (*Profile 2R: Average Balanced Bilinguals*) in another. The latter was also observed in the Turkish sample (*Profile 2T: Average Balanced Bilinguals*); however, instead of a competent bilingual profile, a German-dominant profile was identified (*Profile 1T: German-Dominant*). These preliminary findings suggest that among bilingual children, there are variations in competence levels in both MaL and MiL. By the time of the conference, results from logistic regression analyses will be available that will help explain which learning conditions of different contexts (e.g., individual preconditions, or family and institutional language use) contribute to different competence profiles within and across MaL and MiL.

AI-prompted peer feedback: Can an AI feedback coach enhance peer feedback quality?

Keywords: Artificial Intelligence, Educational Technologies, Feedback, Mixed-method Research

Presenting Author:Rasmus Hansen, Aarhus University, Denmark; **Co-Author:**Christopher Neil Prilop, Aarhus University, Denmark; **Co-Author:**Tobias Alsted Nielsen, Aarhus University, Denmark

Research shows that peer feedback can significantly impact higher education students' performance. However, peer feedback often is of poor quality. Studies indicate that peer feedback quality can be enhanced by using prompts to guide students' feedback composition. To date, interventions applied static prompts that do not interact with students' peer feedback input. Hence, this study explores the impact of an AI-based feedback coach that dynamically prompts students during feedback provision. The following research question was addressed: Does an AI-based feedback coach influence the composition of written peer feedback? To investigate this, a quasi-experimental study was conducted in a competency development course for Ph.D. students (N = 46). Participants were tasked with submitting a written lesson plan in a digital learning environment and providing peer feedback. Students were divided into an intervention group (IG, n = 20) and a control group (CG, n = 26). In the IG an AI feedback coach was enabled during the feedback process, in the CG not. Peer feedback quality was assessed by analyzing the feedback comments concerning length, readability, and sentiment using Natural Language Processing. Using Prins et al.'s (2006) feedback quality index (e.g., use of examples and explanations), quantitative-qualitative content analysis of each feedback comment is currently being conducted. Analyses showed that CG participants wrote 326 comments, while the AI-assisted group wrote 418 comments. Preliminary findings indicate that participants with AI coaching wrote significantly shorter comments (t-test, $p < .05$ $d = 0.15$). Readability scores and sentiment analysis did not yield significant findings. Results from the in-depth content analysis will be presented at the conference. This study contributes to the field of feedback research by analyzing how AI applications can enhance peer feedback quality and the peer feedback process.

Session E 7

26 June 2024 11:00 - 12:30

Aula 14

Roundtable

Assessment and Evaluation, Instructional Design, Motivational, Social and Affective Processes

Teaching Strategies and Classroom Interaction

Keywords: Eye Tracking, Feedback, Higher Education, Mathematics / Numeracy, Primary Education, Qualitative Methods, Quantitative Methods, Secondary Education, Self-efficacy, Self-regulated Learning and Behaviour, Teaching / Instructional Strategies

Interest group: SIG 01 - Assessment and Evaluation, SIG 10 - Social Interaction in Learning and Instruction, SIG 16 - Metacognition and Self-Regulated Learning

Chairperson: Liyuan E, University of Helsinki, Finland

Developing a category system to identify adaptive teaching in elementary mathematics classrooms

Keywords: Mathematics / Numeracy, Primary Education, Qualitative Methods, Teaching / Instructional Strategies

Presenting Author:Anne-Kathrin Buttchereyt, Bergische Universität Wuppertal, Germany

Adaptive teaching is frequently cited as crucial in addressing heterogeneity. The concept is defined as a key competence for addressing the diverse social, linguistic, motivational, didactic and cultural teaching needs of students and their learning processes and it refers to a reservoir of specific interactions and measures that occur at the procedural micro level (Beck et al., 2008; Parsons et al., 2018). Although this construct is highly valued in educational and instructional research, there is a lack of instruments for assessing adaptive teaching in real classroom settings. The study aims to fill this gap by developing a category system through a deductive-inductive approach. It analyses the interactions between teachers and pupils in six primary school mathematics classes using video recordings. The interim results consist of deductively derived main categories on three levels, which are further subdivided into content-related or social subcategories and serve as the basis for the first inductive categories. The study focuses on understanding at what levels of characteristics and in what ways teachers analyze teaching and learning processes and intervene adaptively. It is shown that adaptive teaching retains its complex and multifactorial structure even when empirically reconstructed, and that features of teacher behavior must be interpreted in relation to each other.

Promoting self-regulated learning through peer observation and feedback in secondary school students

Keywords: Quantitative Methods, Secondary Education, Self-regulated Learning and Behaviour, Teaching / Instructional Strategies

Presenting Author:Anabela Caetano Santos, Aventura Social Associação; Universidade Aberta; ISCTE - Instituto Universitário de Lisboa, Portugal; **Co-Author:**Ana Mouraz, Laboratório de Educação à Distância e eLearning, Universidade Aberta, Portugal; **Co-Author:**Ana Cristina Torres, Centro de Investigação e Intervenção Educativas (CIIE), Faculdade de Psicologia e de Ciências da Educação, Portugal; **Co-Author:**Helena Silva, Departamento de Educação e Psicologia, Universidade de Trás-os-Montes e Alto Douro; Centro de Investigação e Intervenção Educativas da Universidade do Porto, Portugal; **Co-Author:**Artur Oliveira, Centro de Investigação e Intervenção Educativas (CIIE), Faculdade de Psicologia e de Ciências da Educação, Universidade do Porto, Portugal; **Co-Author:**Andréa Silva, Departamento de Educação e Psicologia, Universidade de Trás-os-Montes e Alto Douro, Portugal

Self-regulation of learning is one of the key competencies for the 21st century and comprises learners who are able to independently guide themselves through the process of skills acquisition. The aim of the project WAY is to promote student self-regulated learning in the classroom through peer observation and feedback. This proposal links peer observation with the development of self-regulation skills in learning, seeking to provide opportunities for student participation in changing teaching practices. On the one hand, peer observation can effectively develop observation, reflection and self-analysis, enabling students to self-regulate their learning, and on the other hand, asking them to give feedback on what they have observed creates moments of participation and dialogue focused on classroom activities, allowing students' voices to be heard and increasing their involvement in teaching activities. This project runs from 2023 to 2025, and this presentation will focus on the quantitative data study that was developed in the 2023/24 school year. This quasi-experimental study is expected to include around 300 students in the 10th grade from 3 Portuguese public school groups, divided into an intervention group and a control group, with data collection taking place before and after the intervention. Quantitative data will be based on the Learning Motivation Strategies Questionnaire, which is a self-report measure designed to assess students' motivation, cognitive and metacognitive learning strategies and resource management strategies. It is expected that after the intervention, the students in the experimental group will report a higher level of motivation, more cognitive and metacognitive learning strategies and resource management strategies than the students in the control group. Since the intervention in the context of this project will run for another school year, it is intended that the discussion of this presentation might impact research to be carried out in the 2024/25 school year.

Exploring Self-Efficacy: Qualitative Insights on Feedback and Attributions.

Keywords: Eye Tracking, Feedback, Higher Education, Self-efficacy

Presenting Author:Charlotte Van Tricht, University of Antwerp, Belgium; **Co-Author:**David Gijbels, University of Antwerp, Belgium; **Co-Author:**Vincent Donche, University of Antwerp, Belgium

Online self-evaluation instruments are emerging in the transition from secondary to higher education. These instruments provide automated and personalized feedback to students. However, the internal processing of this feedback remains a mystery, and there is no point in providing feedback if it is not used. Recently, several systematic reviews conclude there is a lack of knowledge and calls for more research into the internal processing of feedback are made. Theoretically, the 'black box of feedback processing' consists of interpretation, emotions elicited by feedback and decision-making, which are filtered by the initial state of the student. Nevertheless, there is a lack of empirical evidence in this area, more specifically regarding the influence of self-efficacy (initial state) which are students' self-perceptions about their ability to accomplish a task, and the interaction with interpretation of feedback. This is why this study aims to untangle the interactions between attributions and self-efficacy in the case of online feedback reports. Eye-tracking and EDA will serve as a basis for cued recalls in order to provide an in-depth understanding, and a small interview was conducted. Reading times calculated via AOL (area of interest) are also used. Analysis is ongoing, and results and questions regarding RQ1 will be presented at the conference.

Workshops III 1

26 June 2024 14:00 - 15:30

Aula 13

JURE 2024 Workshop

Utilizing Artificial Intelligence for the Synthesis of Educational Videos: A Workshop

Keywords: Artificial Intelligence, Instructional Design, Multimedia Learning, Video-based Learning

Interest group:

This workshop requires you to bring your own laptop.

What if you could use AI to generate a video based on a podcast or article as instructional material? Or create multiple videos with small changes, such as a different colour shirt, more intense emotion, a larger presenter, or more head movement for your experiments? In this workshop, we will go through the workflows of creating AI-generated instructional videos using free and (when possible) open-source software. The workflows for this process are dependent on the amount of computing power you have access to. While AI-generating short lip-syncing on an animated still image can be easily rendered in the cloud, generating complex facial expressions and even emotions based on a podcast using AI is only possible with machine-learning frameworks such as TensorFlow. Your choice of machine learning models can also differ depending on cultural aspects: Some cultures require more expressive AI-generated emotion and facial expressions than others. After this workshop, you will be able to create an AI-generated video, and you will receive a manual you can fall back on when experimenting with more computing power.

Utilizing Artificial Intelligence for the Synthesis of Educational Videos: A Workshop

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

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What if you could use AI to generate a video based on a podcast or article as instructional material? Or create multiple videos with small changes, such as a different colour shirt, more intense emotion, a larger presenter, or more head movement for your experiments? In this workshop, we will go through the workflows of creating AI-generated instructional videos using free and (when possible) open-source software. The workflows for this process are dependent on the amount of computing power you have access to. While AI-generating short lip-syncing on an animated still image can be easily rendered in the cloud, generating complex facial expressions and even emotions based on a podcast using AI is only possible with machine-learning frameworks such as TensorFlow. Your choice of machine learning models can also differ depending on cultural aspects: Some cultures require more expressive AI-generated emotion and facial expressions than others. After this workshop, you will be able to create an AI-generated video, and you will receive a manual you can fall back on when experimenting with more computing power.

Workshops III 2

26 June 2024 14:00 - 15:30

Aula 14

JURE 2024 Workshop

Effective Meeting Skills

Keywords: Case Studies, Cognitive Skills and Processes, Communities of Learners and/or Practice, Doctoral Education

Interest group:

For junior and senior researchers, attending meetings with colleagues, other researchers or different students to collaborate, organise and coordinate tasks is a regular part of our day-to-day professional activities. Through this workshop we would like to share some skills and strategies that can be applied to the context of a work meeting to be effective. We will suggest strategies that can be applied at the beginning, during and at the end of the meeting to make it effective and create a good working atmosphere where all the people attending feel part of as well as listened to and valued. For example, we will learn how to start a meeting by defining the working context, as this context will determine the involvement and participation of the people attending, our expectations or our way of thinking. This workshop will be developed through everyday situations we face in meetings. After sharing the specific contents, we expect you to analyse and enrich hypothetical situations. Moreover, the workshop is designed for you to acquire strategies whether you are the person organising the meeting or the person attending. Although the strategies will be applied to the context of a meeting, most of them can be generalised to other work-related situations.

Effective Meeting Skills

Presenting Author: María García Serrano, University of Salamanca, Spain; **Presenting Author:** Javier Rosales, University of Salamanca, Spain; **Presenting Author:** Madalin Deliu, University of Salamanca, Spain

For junior and senior researchers, attending meetings with colleagues, other researchers or different students to collaborate, organise and coordinate tasks is a regular part of our day-to-day professional activities. Through this workshop we would like to share some skills and strategies that can be applied to the context of a work meeting to be effective. We will suggest strategies that can be applied at the beginning, during and at the end of the meeting to make it effective and create a good working atmosphere where all the people attending feel part of as well as listened to and valued. For example, we will learn how to start a meeting by defining the working context, as this context will determine the involvement and participation of the people attending, our expectations or our way of thinking. This workshop will be developed through everyday situations we face in meetings. After sharing the specific contents, we expect you to analyse and enrich hypothetical situations. Moreover, the workshop is designed for you to acquire strategies whether you are the person organising the meeting or the person attending. Although the strategies will be applied to the context of a meeting, most of them can be generalised to other work-related situations.

Workshops III 3

26 June 2024 14:00 - 15:30

Aula Máster 1

JURE 2024 Workshop

Confirmatory Factor Analysis: Applications in Educational Research

Keywords: Assessment Methods, Large-scale Assessment, Meta-analysis, Quantitative Methods

Interest group:

Often in educational research, we deal with latent constructs; that is, variables that are not directly measurable (e.g., numerical skills, academic self-concept). The operational definition of these constructs is determined by theory and tested using appropriate statistical methodology, namely Confirmatory Factor Analysis (CFA). In this framework, the observed scores of the variables (e.g., answers to the items of a psychometric scale) are conceptualized as realizations of the variables' true scores, probably measured with error, and construct validation can be implemented. A scale's construct validity is defined as the degree to which the set of items consisting of the scale measures the theoretical construct they were designed to measure.

In the first part of this workshop (day 1), I draw on an empirical example validating the internal structure of academic self-concept to demonstrate the application of this approach in educational research. I begin by discussing relevant theory and current state-of-the-art empirical studies, presenting the range of possible structural models of academic self-concept. I then show how CFA can be used to test the appropriateness of each of these models and explain how CFA output can be interpreted (e.g., standardized estimates of factor loading and goodness-of-fit test values).

Confirmatory Factor Analysis: Applications in Educational Research

Presenting Author: Ioulia Televantou, European University Cyprus, Cyprus

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In the first part of this workshop (day 1), I draw on an empirical example validating the internal structure of academic self-concept to demonstrate the application of this approach in educational research. I begin by discussing relevant theory and current state-of-the-art empirical studies, presenting the range of possible structural models of academic self-concept. I then show how CFA can be used to test the appropriateness of each of these models and explain how CFA output can be interpreted (e.g., standardized estimates of factor loading and goodness-of-fit test values).

Workshops III 4

26 June 2024 14:00 - 15:30

Aula Máster 2

JURE 2024 Workshop

Practical and Policy Implications of Research

Keywords: Communities of Learners and/or Practice, Educational Policy, Researcher Education, Synergies Between Learning / Teaching and Research

Interest group:

In this interactive workshop we will focus on research impact and why it is important. We will discuss different types of impact and how to influence policy. What do we mean by policy? What do policymakers want from researchers? What ethical aspects should be considered when engaging with policymakers? Using real world examples and case studies we will discuss how to identify opportunities to create policy impact. We will address common challenges and barriers faced by early career researchers in translating research to policymakers, and provide some suggestions of best practice.

Practical and Policy Implications of Research

Presenting Author: Michael S. C. Thomas, Birkbeck, University of London, United Kingdom; **Presenting Author:** Jo Van Herwegen, UCL Institute of Education, United Kingdom

In this interactive workshop we will focus on research impact and why it is important. We will discuss different types of impact and how to influence policy. What do we mean by policy? What do policymakers want from researchers? What ethical aspects should be considered when engaging with policymakers? Using real world examples and case studies we will discuss how to identify opportunities to create policy impact. We will address common challenges and barriers faced by early career researchers in translating research to policymakers, and provide some suggestions of best practice.

Session F 1

26 June 2024 16:00 - 17:30

Aula 12

Single Paper

Higher Education, Motivational, Social and Affective Processes

Student Wellbeing and Dropout Intentions

Keywords: Achievement, Educational Challenges, Emotion and Affect, Experimental Studies, Higher Education, Quantitative Methods, Secondary Education, Self-concept, Survey Research, Well-being

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

Chairperson: Yukari Abe, Kyoto University, Japan

Intra-individual reciprocal relations between facets of study satisfaction and dropout intentions

Keywords: Higher Education, Quantitative Methods, Survey Research, Well-being

Presenting Author: Anne Scheunemann, Ruhr-University Bochum, Germany; **Co-Author:** Theresa Wenker, University of Mannheim, Germany; **Co-Author:** Lisa Bäumke, Hector Research Institute of Education Sciences and Psychology, Germany; **Co-Author:** Daniel Oliver Thies, Ruhr-University Bochum, Germany; **Co-Author:** Markus Dresel, University of Augsburg, Germany; **Co-Author:** Stefan Fries, University of Bielefeld, Germany; **Co-Author:** Detlev Leutner, University of Duisburg-Essen, Germany; **Co-Author:** Joachim Wirth, Ruhr-University Bochum, Germany; **Co-Author:** Carola Grunschel, University of Münster, Germany

Student dropout is a multi-causal and dynamic process in which various variables influence each other over time (Heublein, 2014). Important predictors for student dropout are dropout intentions and study satisfaction (Mashburn, 2000). On the one hand, low study satisfaction predicted higher dropout intentions (Mashburn, 2000). On the other hand, the dropout process could draw attention to negative aspects of studying (Ghassemi et al., 2017) and study satisfaction could decrease due to increasing dropout intentions. Theoretical dropout models describe dropout as an intra-psychic process (Mashburn, 2000) and neglect reciprocal relations between study satisfaction and dropout intentions. Empirical results on the reciprocal relations are limited to the inter-individual level and inconsistent (Lindner et al., 2023; Scheunemann et al., 2021) – possibly because they neglected the multidimensionality of study satisfaction (satisfaction with study content [S-Content], coping with study-related stress [S-Coping], study conditions [S-Condition]). To close this research gap, the present study delivers elaborate insights into the reciprocal relations between different facets of study satisfaction and dropout intentions on the intra-individual level. Therefore, we assessed seven waves every six weeks over two semesters ($N = 746$ students). We conducted three random intercept cross-lagged panel models – one for each study satisfaction facet. We found negative reciprocal relations from beginning to middle of each semester for dropout intentions and S-Content, but no reciprocal relations for S-Coping and S-Condition. This may be explained by the sample characteristics: 88 % of our participants were at least in their fifth semester and were experienced in dealing with study-related demands. Future studies could investigate the relations between S-Coping and dropout intentions for less experienced students. On a theoretical level, dropout models should consider reciprocal relations between study satisfaction and dropout intentions. On a practical level, students with higher dropout intentions might benefit from training to increase their interest in study content.

Effects of a Positive Psychology Intervention on Student Well-being. A Person-centered Approach

Keywords: Emotion and Affect, Quantitative Methods, Secondary Education, Well-being

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

Student well-being has positive effects on important school-related outcomes, like engagement and achievement. However, students' well-being often decreases over their academic trajectory, especially during secondary school. While interventions to foster student well-being have proven to be effective, differential effects on specific student subpopulations must be considered. Utilizing a person-centered approach, the present study explores the multidimensionality of well-being and its relationship with intervention effectiveness. In a longitudinal project involving 681 grade 8 students, a 10-week intervention program with four experimental groups (3 intervention and 1 control group), containing diverse exercises was implemented, and student well-being was measured before, during and after the intervention. Latent profile analysis revealed four distinct well-being profiles. Latent transition analysis indicated

stability in profile membership, with differential shifts observed in the experimental groups, implying different positive intervention effects for specific student subpopulations. Findings underscore the need for adaptive interventions, as their effectiveness may vary based on students' initial well-being characteristics. The results emphasize the necessity of considering the multidimensional nature of well-being and students' differential compositions thereof in developing dynamic interventions. This research contributes nuanced insights to inform approaches to tailored interventions aimed at fostering student well-being.

Positivity's Power? Results of a student well-being intervention in secondary school in Switzerland.

Keywords: Educational Challenges, Experimental Studies, Secondary Education, Well-being

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

The rapid and profound changes in our world pose a great challenge to student well-being, especially at the secondary school level where age-related changes also occur. Therefore, many school systems have recognized the importance of fostering not only the skills of academic achievement but also the skills of well-being. To contribute to a deeper understanding of methods to improve students' well-being, this study examines the effect of a 10-week well-being intervention program on student well-being. The program combined several exercises and included three condition groups (self-oriented, social-oriented, combination of both) and one placebo control group. The analysis was based on data of students in Grade 8 ($N = 685$) in Switzerland at three time points. Results of multivariate analysis of variance (MANOVA) with post hoc Bonferroni contrasts showed significant variations in student well-being over time. The findings, however, differed regarding different dimensions of student well-being. Despite, the intervention exercises led to an overall decrease in student well-being, worries in school decreased over the intervention time in all condition groups. The insights gained on student well-being intervention program contribute to intervention research. Furthermore, a multi-dimensional approach to student well-being enables to overcome the limitations of prior studies that measure student well-being as a single indicator or use several separate measures to investigate well-being in school.

Profiles and predictors of achievement, study satisfaction, and dropout intention within students

Keywords: Achievement, Higher Education, Self-concept, Well-being

Presenting Author:Lena Sofie Kegel, University of Münster, Germany; **Co-Author:**Carola Grunschel, University of Muenster, Germany

Academic success is a key construct in higher education research. However, empirical studies are missing that examine how different academic success domains simultaneously coexist *within* students. To examine whether success in one domain of achievement, study satisfaction, and dropout intention is accompanied by success in the other two domains, we adopted a person-centered perspective. In addition, we examined how personal characteristics relate to academic success patterns to better understand who becomes successful at university. We analyzed a sample of $N = 4,784$ students from German universities with latent profile analysis to test our assumptions on quantitative and qualitative differences in intraindividual combinations of multiple academic success domains. In line with theoretical assumptions, four profiles showed fixed shapes across profile indicators on quantitatively different levels. Only the fifth profile showed a qualitatively differing pattern: similar high GPA as in another profile but lower study satisfaction and higher dropout intention. In line with our expectations concerning the personal characteristics, students with high GPA, high study satisfaction, and low dropout intention reported the highest academic self-concept. There were no significant differences in terms of age or first-generation student status between the five profiles. Contrary to our expectation, the profile with the highest GPA and lowest dropout intention included relatively more men than woman. Overall, our findings support theoretical assumptions and variable-centered findings that for most students' success in one domain of achievement, study satisfaction, or dropout intention is accompanied by success in the other two domains. These findings underline how relevant supporting students in achieving academic success is. Fostering the academic self-concept might be especially helpful for supporting students in achieving academic success, as it was holistically linked to all three academic success domains in our study.

Session F 2

26 June 2024 16:00 - 17:30

Aula 13

Single Paper

Higher Education, Lifelong Learning

Competencies in Higher Education

Keywords: Assessment Methods, Competencies, Cooperative / Collaborative Learning, Digital Literacy and Learning, Educational Challenges, Engineering Education, Higher Education, Lifelong Learning

Interest group: SIG 04 - Higher Education

Chairperson: Anne-Roos Verbree, Netherlands

Lifelong Learning Competencies for Engineering Students

Keywords: Competencies, Engineering Education, Higher Education, Lifelong Learning

Presenting Author:Shan Tuytaerts, KU LEUVEN, Belgium; **Co-Author:**Tinne De Laet, KU Leuven, Belgium; **Co-Author:**Lynn Van den Broeck, KU Leuven (BE), Belgium; **Co-Author:**Greet Langie, KU LEUVEN, Belgium

Engineers participate in lifelong learning (LLL) to keep up with current trends and technological advancements. In order to do this well, they should possess certain competencies that we refer to as LLL competencies. This study seeks out to determine what such competencies are necessary for engineers by means of a systematic literature review, taking the PRISMA approach. After a thorough screening process, eight articles were retained for data extraction. The competency wordings were extracted verbatim and mapped to the five dimensions of LLL as used by Kirby et al. in their LLL scale development: goal setting, application of knowledge and skills, self-direction and evaluation, locating information, and adaptable learning strategies. The dimension of self-direction and evaluation appears to be very important for engineers, with every included paper in this study providing at least one related competency. The dimensions of locating information and adaptable learning strategies each have three competency wordings extracted from the engineering literature mapped to them, originating from different papers. Only one engineering paper contributed competencies to the application of knowledge and skills dimension, and no competency wordings emerged from the literature study that could be mapped to goal setting. Further work can be done on the role of the latter competency dimensions in engineers' LLL.

The effectiveness of a teamwork reflection intervention on teamwork quality and competence in MSTs

Keywords: Competencies, Cooperative / Collaborative Learning, Educational Challenges, Higher Education

Presenting Author:Roosmarijn van Woerden, Utrecht University, Netherlands; **Co-Author:**Merel van Goch, Radboud University, Netherlands; **Co-Author:**Iris van der Tuin, University Utrecht, Netherlands; **Co-Author:**Sandra Schruijer, Utrecht University, Netherlands

In academia, the sheer complexity of fundamental or applied problems often demand a multidisciplinary or interdisciplinary approach. Universities develop programs that transcend disciplinary boundaries to prepare students for interdisciplinary projects in multidisciplinary teams. Teamwork in multidisciplinary student teams (MSTs) can be a challenge for students, as there are quite some known obstacles to effective teamwork such as free-riding, loafing, conflict, lack of trust, lack of shared mental models, and the interdependence of the task. Working in multidisciplinary teams provides an extra challenge because the task is often complex, and disciplinary differences are not easy to overcome. As teamwork is dynamic and complex, a type of learning is needed that is designed or apt for this dynamic and complex environment. Reflection is theorized to be a powerful tool for learning in complex and dynamic environments. We tested a teaching intervention based on guided team reflection on teamwork (TRTT-intervention) in MSTs. This intervention study compared an intervention group to a control group on the dimensions of teamwork competence of individual members, quality of teamwork processes, team emergent states, task output, team viability and team member satisfaction. Results of a multi-level analysis show that there was no positive effect of a TRTT-intervention on the teamwork competence, quality of teamwork processes, team emergent states, team viability and team member satisfaction, and a negative relationship was found between the TRTT-intervention and task output in MSTs. In the multi-level analyses the effect of the context variable 'team' was significant for relationship

conflict, task conflict, cohesion, trust and team viability, and not significant for teamwork competence, teamwork processes, psychological safety, team efficacy and team member satisfaction.

Towards university teaching innovation: Digital Scholarship and assessment and feedback practices.

Keywords: Assessment Methods, Competencies, Digital Literacy and Learning, Higher Education

Presenting Author: Federica Picasso, University of Trento (I), Italy

In today's higher education context there is an increasing focus on the development of digital competences of academics as Digital Scholars (Weller, 2011; Van Petegem et al., 2021). The importance of this topic is also highlighted by frameworks such as the DigCompEdu (Redecker & Punie, 2017) with its six main competence areas (1 Professional engagement; 2 Digital resources; 3 Teaching and learning; 4 Assessment; 5 Student empowerment; 6 Facilitation of students' digital competences). This study explores the area of assessment and, in particular, aims to investigate Technology-Enhanced Assessment (TEA) practices (Devedzic, & Devedzic, 2019) to identify models of academic development on this topic in the Italian and international context. The first research actions was a systematic literature review process that aimed to explore existing academic development actions, programmes and models to support TEA practices in the international scenario. In light of these findings, an academic development model is currently being structured within doctoral research. The model involves the creation of an online course (MOOC- Baturay, 2015) open to all teachers at the University of Trento for the development of specific digital skills related to the area of assessment and feedback enhanced by the use of technology and the identification of key principles developed through interviews with experts in the UK context, where these practices are widely developed. The impact of the online course is now monitored and case studies of implementation of TEA practices are currently carried out with volunteer academics at University of Trento.

Session F 3

26 June 2024 16:00 - 17:30

Aula 14

Single Paper

Cognitive Science, Teaching and Teacher Education

Mathematics and Numeracy

Keywords: Achievement, Attitudes and Beliefs, Experimental Studies, Gender Issues, Mathematics / Numeracy, Parents' Beliefs and Affect, Pre-service Teachers, Secondary Education

Interest group: SIG 11 - Teaching and Teacher Education

Chairperson: Valentina Ronqui, Uruguay

Association between children's gendered activities, family organization and sex differences in maths

Keywords: Achievement, Gender Issues, Mathematics / Numeracy, Parents' Beliefs and Affect

Presenting Author: Lilas Gurgand, Ecole Normale Supérieure, France; **Co-Author:** Alexandre Renac, Ecole Normale Supérieure, Université de Lyon 2, France;

Co-Author: Hugo Peyre, Ecole Normale Supérieure, Montpellier University Hospita, France; **Co-Author:** Franck Ramus, Ecole Normale Supérieure, France

This study explores the influence of the family environment on early mathematics gender differences (1st grade). More specifically, the current study focuses on children's gendered activities and parental household task distribution. Drawing on data from over 4,000 children from a French birth cohort, our findings suggest that, during preschool, children from less traditional households may achieve higher academic success regardless of income or parent's education, and of their sex. However, it appears that boys' achievement in math is no longer related to the gendered family organization in 1st grade, and thus gender disparities in favor of boys are more pronounced in households with a more traditional family organization. This suggests that at least part of the math gender differences stem from the family environment. Then, we found no strong evidence that a more stereotypical gendered family organization globally promotes more gender-stereotypical activities in children. Furthermore, sex differences in 1st grade math scores were not accounted for by differences in gendered activities between boys and girls. These results offer valuable insights into the role played by the family, interpreted alongside existing scientific literature on gender stereotypes.

Math Gender Gaps: What about future teachers' knowledge, confidence, anxiety and self-concept?

Keywords: Attitudes and Beliefs, Gender Issues, Mathematics / Numeracy, Pre-service Teachers

Presenting Author: Ana María Espinoza Catalán, Universidad de O'Higgins, Chile; **Co-Author:** Macarena Angulo, Universidad Diego Portales, Chile; **Co-**

Author: David Maximiliano Gomez Rojas, Universidad de O'Higgins, Chile

Math skills have been shown to be a strong predictor of future academic success. Unfortunately, multiple studies evidence teachers' adherence to math-gender stereotypes which affect their math self-confidence and math self-concept, or even become math anxiety; phenomena that are then transmitted to students affecting their learning outcomes. In order to contribute information on gender equity discussion from the teachers' role, a cross-sectional comparison between groups' design was carried out with the participation of 486 future teachers from Non-math, Primary and Secondary math teaching programs at a Chilean public university. The focus of this research was on the following questions: (1) how are future teachers' math anxiety, knowledge and self-confidence affected by sex? and (2) looking specifically at students from Primary and Secondary math teaching programs, how do sex, math anxiety, self-confidence, and self-concept relate to their math knowledge? Measures were obtained through a diagnostic questionnaire adapted from previous studies multivariate analysis of variance (MANOVA) and corresponding post hoc analysis were performed, as well as multiple linear regression analysis. Analysis revealed that there is an interaction effect between students' sex and teaching program. Gender differences were found only among Non-math program students, specifically in math anxiety and self-confidence. Male students show higher levels of self-confidence and females higher levels of math anxiety. Also, math anxiety, self-concept, and sex showed significant effects on math knowledge. Self-confidence partially mediates the effects of math anxiety and self-concept on knowledge, and fully mediates the effect of sex on math knowledge. The results are analyzed in light of the implications for initial teacher training in Chile, with a focus on the importance of reflecting on the impact of math-gender beliefs and stereotypes on teaching practices and students' achievement.

Solving realistic word problems in a meaningful way: The role of problem-embedding and prompts

Keywords: Attitudes and Beliefs, Experimental Studies, Mathematics / Numeracy, Secondary Education

Presenting Author: Andrea Wisenöcker, Johannes Kepler University Linz, Austria; **Co-Author:** Cornelia S. Große, Johannes Kepler University Linz, Austria, Austria

Realistic word problems are word problems in mathematics that require real-world considerations in order to obtain a meaningful solution. However, students often fail to take into account their real-world knowledge, generating solutions which are mathematically correct, but not realistic. We investigated the effect of embedding realistic word problems in different backstories, and of providing assistance in the form of prompts, on the number of realistic solutions. We further investigated the relationship between students' beliefs about word problems and the number of realistic solutions. $N = 118$ 5th-graders (56 girls, 52 boys, 10 other/missing; age: $M = 10.93$, $SD = 0.66$) participated. A two-factorial experiment with the factors embedding (mathematics classroom vs. non-school) and prompts (with vs. without) was implemented. Students solved five realistic word problems and answered 16 questions regarding their beliefs about word problems. The embedding did not have a significant impact on the number of realistic solutions ($F(1, 114) = 2.00$, $p = .160$, $\eta_p^2 = 0.017$). Prompts led to significantly more realistic solutions ($F(1, 114) = 9.57$, $p = .002$, $\eta_p^2 = 0.077$). The interaction was not significant ($F(1, 114) = 0.425$, $p = .516$, $\eta_p^2 = 0.004$). Restricted, but not open beliefs about word problems were significantly associated with the number of realistic solutions ($r = -.20$, $p = .03$, and $r = .01$, $p = .90$, respectively). The results suggest that students can be supported in finding realistic solutions if the realistic modelling complexity of a problem is adequately addressed, and overcoming restricted beliefs may also play an important role.

Session F 4

26 June 2024 16:00 - 17:30

Aula Máster 2

Single Paper

Cognitive Science, Developmental Aspects of Instruction

Mathematics and Numeracy in Secondary Education

Keywords: Cognitive Skills and Processes, Educational Neuroscience, Knowledge Construction, Learning Strategies, Mathematics / Numeracy, Mixed-method Research, Problem Solving, Secondary Education

Interest group: SIG 16 - Metacognition and Self-Regulated Learning, SIG 18 - Educational Effectiveness and Improvement, SIG 22 - Neuroscience and Education

Chairperson: Vanessa Fernández-Torres, Spain

Unraveling the Interplay of Conceptual and Procedural Knowledge in Fractions among Middle Schoolers

Keywords: Knowledge Construction, Learning Strategies, Mathematics / Numeracy, Mixed-method Research

Presenting Author: Bengi Birgili-Karabulut, MEF University, Türkiye; **Co-Author:** Firat Arda, MEF University, Türkiye; **Co-Author:** İpek Saralar-Aras, Ministry of National Education, Türkiye

This study examines the association between conceptual and procedural knowledge of fractions. Using a mixed-methods approach, 30 students from a private school in İstanbul, Republic of Türkiye were selected as participants. An evaluation of conceptual and procedural comprehension was conducted through a fractions test, with subsequent analysis revealing correlations with end-of-semester mathematics scores. Additionally, semi-structured interviews were conducted to explore possible reasons behind these understandings. The results revealed a significant correlation between conceptual and procedural knowledge. Successful students demonstrated a combination of both types of knowledge, while less successful students relied mainly on procedural knowledge, which was further confirmed in the interviews. The findings highlight the importance of fostering a balanced acquisition of conceptual and procedural knowledge in fractions to enhance mathematical understanding and skills among sixth-grade students. Future studies could delve into effective instructional strategies promoting a balanced integration of conceptual and procedural knowledge, aiming to optimize mathematical learning outcomes for middle school students.

Mathematical proficiency and the advantage of organizing verbal information on a Working Memory Line

Keywords: Cognitive Skills and Processes, Educational Neuroscience, Mathematics / Numeracy, Secondary Education

Presenting Author: Julie Vonck, Ghent University, Belgium; **Co-Author:** Jolien Moorkens, UGENT, Belgium; **Co-Author:** Wim Fias, Ghent University, Belgium; **Co-Author:** Jean-Philippe van Dijck, Ghent University and Thomas More University of Applied Sciences, Belgium

It is commonly known that mathematics lies at the heart of numerous human endeavours and is predictive of later academic and professional success at the individual level. It is, therefore, not surprising that substantial research is dedicated to understanding interindividual differences in mathematical performances. Order processing in verbal working memory has been proposed as a contributing factor. More specifically, it is the characteristic of how our cognitive system encodes order information on a spatialized horizontal working memory line (WML), which is typically organized according to our reading habits. A recent study revealed that spatially mapping serial order in verbal WM from left to right is advantageous for overall mathematical outcomes. The current study aims to replicate, extend, and refine this insight by investigating this relation from a developmental perspective, with a broad measure of mathematics and controlling for potentially mediating variables. For this purpose, we conduct a large-scale ($n = 862$) study of 13 and 15-year-old secondary education students who perform a standardized curriculum-based math test, an ordinal position task, and a measure for crystallized intelligence. In this talk, we will present our results that support the hypothesis that already from a younger age, students showing a consistent left-to-right spatialization reveal stronger mathematical performances. Interestingly, there is no significant difference when comparing math domains and age groups, and the relation still holds after a correction for crystallized intelligence.

Structural Equation Modelling: Associating Cognitive Factors to Mathematical Problem-Solving Skills

Keywords: Cognitive Skills and Processes, Mathematics / Numeracy, Problem Solving, Secondary Education

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

Proficiency in mathematical problem-solving is important for addressing the challenges of the 21st century. Mathematical problem-solving in the science context is a complex skill that requires mathematical prior knowledge, science knowledge, and text comprehension skills. In this study, we examine the relationship among cognitive factors in mathematical problem-solving, specifically focusing on pre-existing mathematical knowledge, science knowledge, and text comprehension skills. We have formulated and evaluated a theoretical model employing structural equation modeling. The data considered in this study included tests and documents from students grades seven to nine ($n = 1,067$). We found that the model satisfies the goodness of fit indices. Notably, all cognitive factors indicated a direct influence on mathematical problem-solving, with mathematical prior knowledge emerging as the most influential factor. Furthermore, mathematical prior knowledge showed an indirect impact on mathematical problem-solving through its effect on science knowledge. Additionally, it is found that mathematical prior knowledge directly influences science knowledge. Further study is recommended to incorporate computational skills as an additional independent variable.

Session F 5

26 June 2024 16:00 - 17:30

Aula 5

Poster Presentation

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

Technology-enhanced Learning and Instruction

Keywords: Cognitive Skills and Processes, Competencies, Computational Thinking, Computer-assisted Learning, Computer-supported Collaborative Learning, Digital Literacy and Learning, Digitalisation, Educational Technologies, Higher Education, Instructional Design, Learning Strategies, Motivation, Multimedia Learning, Science and STEM, Secondary Education, Self-regulated Learning and Behaviour, Teacher Effectiveness, Teaching / Instructional Strategies, Teaching Approaches, Vocational Education and Apprenticeship Training

Interest group: SIG 07 - Technology-Enhanced Learning And Instruction, SIG 11 - Teaching and Teacher Education

Chairperson: HIJJATUL Qamariah, University of Szeged, Hungary

Socio-cognitive and emotional-motivational factors in studying with digital materials

Keywords: Cognitive Skills and Processes, Higher Education, Learning Strategies, Multimedia Learning

Presenting Author: Annalisa Ventrella, University of Bari, Italy; **Co-Author:** Maria Beatrice Ligorio, Bari University, Italy

New technologies have made significant improvements but still is not clear how they are integrated into students' study strategies. For this reason, the research project presented here is aimed at investigating the socio-cognitive and emotional, motivational processes activated by university students when didactic material is presented also in digital format. By using Focus Group Discussions (FGD), the present project wants to better understand how digital devices are used when university students study, how they organize themselves during self-study activities to integrate different digital tools, and the role of contextual factors such as family and school. The comparison between data from Human Science students and Technical ones can help to search for significant differences in learning processes and different strategies in study activities, according to different cultural contexts. The findings of this research project could be

used to increase teachers' awareness about teaching design and proposal and to enhance the learning process through a better integration between digital and not digital learning material. As the project is a work in progress, development steps and potential challenges will be discussed. The present project is a part of a larger national research project founded by the Italian Minister of University and Research.

Exploring Technology Integration in Upper Secondary School: A Latent Profile Analysis

Keywords: Computer-supported Collaborative Learning, Digital Literacy and Learning, Digitalisation, Secondary Education

Presenting Author: Chiara Antonietti, Swiss Federal University for Vocational Education and Training (SFUVET), Switzerland; **Co-Author:** Tessa Consoli, University of Zurich, Institute of Education, Switzerland; **Co-Author:** Maria-Luisa Schmitz, University of Zurich, Institute of Education, Switzerland; **Co-Author:** Alberto A.P. Cattaneo, Swiss Federal University for Vocational Education and Training, Switzerland; **Co-Author:** Philipp Gonon, University of Zurich - Institute of Educational Research, Switzerland; **Co-Author:** Dominik Petko, University of Zurich, Switzerland

The increasing use of technology in education calls for an in-depth examination of how upper secondary school teachers integrate technology into learning activities. This study adopts the Interactive Constructive Active Passive (ICAP) theory to measure and classify technology integration according to levels of student engagement, including passive, active, constructive, and interactive activities. A latent profile analysis (LPA) was conducted involving 2248 in-service teachers from Swiss upper secondary schools. The results revealed three distinctive profiles of technology integration practices. Profile 1 (N = 898) includes teachers that teachers predominantly use technology for passive learning activities. Profile 2 (N = 994) reveals an approach in which technology is used both for content presentation and active student engagement. Profile 3 (N = 196) describes a smaller but innovative group that encourages students to create knowledge both independently and collaboratively using technology. Further examination of teachers' self-reported technology pedagogical content knowledge (TPCK) reveals different levels of self-reported competencies across profiles. Teachers in profile 2 report the highest TPCK. In contrast, profile 3 teachers report the lowest TPCK. Further differences among profiles will be investigated and discussed. The study offers insights into the diverse landscape of technology integration among upper secondary teachers, emphasizing the prevalence of passive and active learning activities. More surprisingly, teachers with the most demanding profile do not seem to be the ones with the highest self-reported competence to teach with technology.

The role of technology in fostering self-regulated learning: A systematic literature review

Keywords: Educational Technologies, Higher Education, Self-regulated Learning and Behaviour, Teacher Effectiveness

Presenting Author: Anikó Bátorí, Maastricht University, Netherlands; **Co-Author:** Simon Beausaert, Maastricht University, Netherlands; **Co-Author:** Bas Giesbers, Maastricht University, Netherlands; **Co-Author:** Alexandra Mihai, Maastricht University, Netherlands

Society and workplaces have changed significantly over the past couple of decades because of the emergence of technology; those changes have made our work more complex, dynamic and challenging. Today's technology-driven dynamic landscape necessitates acquiring skills that enable dealing with these changes flexibly, such as self-regulation (European Commission, 2020; OECD, 2019). The forced move to online education caused by the COVID-19 pandemic showed that some teachers in higher education managed to foster SRL by using technology while others did not (Timotheou et al., 2023). Several reasons have been put forward that help explain this observation. Yet, there is no consensus on the role of technology in fostering self-regulated learning in higher education contexts. A review of the literature is needed to provide clarity. The current study aims The analysis is ongoing, and results and conclusions to provide a systematic literature review to define a conceptual framework for the characteristics of TEL that foster SRL in higher education. Five databases were used: ERIC, PsycINFO, PsycARTICLES, Web of Science, SCOPUS and JSTOR. We searched for relevant articles based on the abstracts by using the following keywords: self-regulated learning OR self-directed learning, AND higher education OR college OR university, AND technology* OR technology-enhanced learning OR online learning OR e-learning OR hybrid learning OR blended learning OR web-based OR LMS OR learning management system. The search terms used for this research identified 13590 papers in January 2024. The analysis is ongoing, and the results and conclusion will be presented at the JURE 2024 conference.

Enhancing learning environments with digital tools to promote self-regulated learning

Keywords: Digital Literacy and Learning, Higher Education, Learning Strategies, Motivation

Presenting Author: Barbara Hrabetz, Universität Regensburg, Germany

Online learning is a promising way of learning for the future. However, self-regulated and interactive learning poses a particular challenge in online learning. The research presented here aims to develop and test digital tools that accompany traditional learning environments such as lectures and support students' abilities for self-directed learning and facilitate the perceived social integration of students. To this end, interdisciplinary teams developed subject-specific digital tools that target cognitive, metacognitive and motivational learning strategies and are also intended to promote interaction between students. The ability for self-regulated learning and the perceived social integration of students were measured at the beginning and end of the lectures in an experimental and a control group. Interviews were also conducted in the experimental group to determine which aspects of the intervention the participants found particularly helpful and why. Statistical analyses are running currently. T-tests will be calculated in the experimental and control groups to determine whether there are differences between the mean scores in terms of self-regulated learning and perceived social integration at the beginning and end of the lectures.

Fostering Online Interaction

Keywords: Computer-assisted Learning, Instructional Design, Teaching / Instructional Strategies, Teaching Approaches

Presenting Author: Nanda van der Stap, Open University of the Netherlands, Netherlands; **Co-Author:** Theo van den Bogaart, HU University of Applied Sciences, Netherlands

The design of a blended learning environment brings about two challenges: social presence (the awareness of others online) and convergence (sequencing of online and face-to-face learning). Not addressing these challenges through solid theory-driven and empirically validated design principles, results in a lack of online interaction, which is the pillar of effective blended learning. Studies on fostering online interaction in blended learning addressing these challenges are fragmented and not synthesised, hence a clear instructional design that meets both challenges is lacking. The purpose of this study is to give a concise understanding and a novel overview of said challenges as currently presented through the fragmented literature on blended learning, and to synthesise the findings into blended learning design principles. Consequently, two systematic literature reviews, one per challenge, were performed. Using a multiple-faceted search strategy on both challenges, whereby the Web of Science was searched and sources cited in reviews were consulted, 20 distinct studies were selected through the guidelines of the PRISMA statement, using predefined selection criteria. For each study, the salient instructions for dealing with both challenges were analysed by two researchers. The results show that social presence in blended learning is mostly evoked through course design, introductory f2f meetings, collaborative activities, and planned facilitation. To facilitate convergence, it is recommended to make basic theory available online, thereby creating more opportunities for deep learning through activities such as, inter alia, discussions and group sessions. This paper adds to the theory on blended learning and instructional design in higher education, and further offers an elaborate set of design principles for educational practice, including suggestions for future research.

Empowering Vocational Students: A Research-Based Framework for Computational Thinking Integration

Keywords: Competencies, Computational Thinking, Science and STEM, Vocational Education and Apprenticeship Training

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

Vocational Education and Training (VET) faces significant challenges in equipping individuals for modern workplaces, which increasingly require digital literacy and CT skills. This paper addresses the imperative of integrating CT into VET programs and outlines key research questions. Our methodology primarily involves a systematic literature review, resulting in the identification of 29 relevant papers. Through qualitative content analysis, we develop a comprehensive CT integration framework that connect CT practices and integration element to the engineering design process, while highlighting the VET context. Arguably the innovative aspect of this framework lies in its core dimensions of harnessing computational power for enhanced efficiency. Raising the question of whether computers can optimize the efficiency and effectiveness of specific tasks is paramount for addressing challenges in technology-rich environments. Therefore, this inquiry merits unwavering attention at every stage of the process. The proposed framework provides educators with a structured approach to identify

integration opportunities and help prepare students for multifaceted vocational careers. Furthermore, other key findings underscore the inherently interdisciplinary nature of VET, the growing demand for STEM competencies, and the transformative potential of CT integration. Implications emphasize the need for further research, supportive policies, and practical CT integration. Despite limitations, this study strongly advocates for CT integration, empowering VET students for success in the contemporary workforce.

Session F 6

26 June 2024 16:00 - 17:30

Aula 11

Poster Presentation

Developmental Aspects of Instruction, Higher Education, Learning and Social Interaction, Learning and Special Education, Teaching and Teacher Education

Exploring Literacy and Language Acquisition

Keywords: Achievement, Cognitive Skills and Processes, Comparative Studies, Critical Thinking, Early Childhood Education, Foreign and Second Language Acquisition, Goal Orientations, Learning Strategies, Primary Education, Reading, Science Education, Secondary Education, Teacher Professional Development, Teaching / Instructional Strategies, Writing / Literacy

Interest group: SIG 05 - Learning and Development in Early Childhood, SIG 08 - Motivation and Emotion, SIG 11 - Teaching and Teacher Education, SIG 12 - Writing, SIG 18 - Educational Effectiveness and Improvement

Chairperson: Shweta Hegde, Germany

Migration Background and Emergent Literacy Skills as Predictors of Reading and Spelling in Grade 2

Keywords: Early Childhood Education, Foreign and Second Language Acquisition, Primary Education, Writing / Literacy

Presenting Author: María Valcárcel Jiménez, Ludwig-Maximilians-Universität (LMU), Germany; **Co-Author:** Melike Yumus, Carl von Ossietzky University Oldenburg, Germany; **Co-Author:** Tina Schiele, Ludwig-Maximilians-Universität (LMU), Germany; **Co-Author:** Anna Mues, Ludwig-Maximilians-Universität (LMU), Germany; **Co-Author:** Frank Niklas, Ludwig-Maximilians-Universität (LMU), Germany

Children's emergent literacy skills are essential for the development of later literacy abilities and school success. However, children with migration background often show poorer language skills in the majority language and are at a greater risk of developing literacy deficits. In addition, there is evidence for the predictive role of emergent literacy skills in reading comprehension, but there has been relatively little research concerning the association between preschool emergent literacy skills and word reading and spelling in Germany. This study examines the associations of emergent literacy skills (vocabulary, phonological awareness [PA], letter knowledge and rapid naming) with word reading and spelling from kindergarten to the end of Grade 2 and evaluates the role of migration background in these associations. Data from 187 preschool children were obtained before school entry ($M_{\text{age}} = 63.58$ months old, $SD_{\text{age}} = 4.45$). Vocabulary and letter knowledge were strong predictors of word reading, whereas letter knowledge and PA were significant predictors of spelling. Further, children's migration background was negatively associated with preschool vocabulary and PA. For children with migration background, vocabulary was the most important predictor of word reading, whereas for children without migration background, letter knowledge was most important. The results reflect the complexity of language development and the relevance of emergent literacy skills as predictors for word reading and spelling. Specific interventions should be developed to promote all children's literacy abilities.

Lexical competence influence on Reading and Spelling: Effects of enhancement on First-Grade children

Keywords: Learning Strategies, Primary Education, Reading, Writing / Literacy

Presenting Author: Alice Mercugliano, University of Florence, Italy; **Co-Author:** Lucia Bigozzi, Università di Firenze, Italy; **Co-Author:** Oriana Incognito, Università di Firenze, Italy

According to earlier research, lexical competence has a significant role in shaping reading and spelling proficiency of primary school students. Knowing how these abilities relate to one another can provide researchers and teachers with insights into reading and writing learning and can help in improving effective intervention methods. This study aims to explore the connection between lexical competence, reading skills, and spelling accuracy in primary school children. The research adopts a pre-post longitudinal approach to assess the effectiveness of an enhancement program that includes activities suggested using a narrative and metacognitive methodology. The program is designed to enhance cognitive processes related to lexical acquisition and assess its impact on reading and writing abilities. The study involved 134 Italian first-grade primary school children (average age = 6.14 years), divided into experimental and control groups. The experimental group underwent the enhancement program, while the control group followed the standard school curriculum, which also included some semantic exercise. Results indicate that, as compared to their peers in the control group, children who completed the enhancement program demonstrated higher scores in reading speed and accuracy, and in spelling accuracy. These findings suggest how it is possible to strengthen the semantic-lexical pathway, as proposed by Coltheart's two-way model (Coltheart et al., 1993, 2001), already at an early age of development, in first grade primary school children, and how this strengthening can lead to improved reading speed, reduced reading errors and enhanced spelling accuracy.

Oral Language and Writing in Early Childhood and Primary Education: Empirical Studies Review

Keywords: Cognitive Skills and Processes, Early Childhood Education, Science Education, Writing / Literacy

Presenting Author: Rubén Díaz-Tejedor, University of León, Spain, Spain; **Co-Author:** Olga Arias-Gundín, University of León, Spain

Writing is an essential tool for the development and active citizenship of human beings. This skill is very important in students' school life, but also in their personal development and subsequent work life. This justifies the need for special attention to the teaching-learning processes directly and indirectly related to this skill and to the difficulties associated with its learning. This is a field of interest in research at the international level. To date, the extensive scientific literature in this regard has demonstrated the influence of oral language competence, particularly oral comprehension, on reading performance and learning. It is, however, necessary to exhaustively understand the empirical evidence on the relationship between oral language and writing. The purpose of this study is to carry out a review of instructional and descriptive studies that analyze the relationship between oral language and writing in students in preschool and early elementary grades. The review was carried out following PRISMA guidelines. The results will be presented and discussed at the conference, and conclusions will hopefully allow researchers to know in detail to what extent students' oral and written skills are related. Likewise, at an educational level, this work will provide useful information for teachers to know what the relationship between both competencies is and how to work on one, oral competency, to enhance the other, written competency, and vice versa. In this way, teachers will be able to choose the most suitable instructional practice according to students' characteristics. This undoubtedly increases effective teaching and facilitates early detection and avoiding of learning problems.

Comparative analysis of instruction in transcription and planning, based in ICTs

Keywords: Comparative Studies, Primary Education, Teaching / Instructional Strategies, Writing / Literacy

Presenting Author: María del Carmen Álvarez Moreno, Universidad de León, Spain; **Co-Author:** Raquel Fidalgo, University of León, Spain, Spain; **Co-Author:** Mark Torrance, Nottingham Trent University, United Kingdom

Writing is considered a basic instrumental tool in education with two fundamental components which are low-level or transcription and high-level cognitive process. To our knowledge, however, no studies compare, in students who have just started to learn to write, the benefits of instruction in transcription skills (differentiating between handwriting and spelling) with the benefits of self-regulated planning instruction, as well as combined instruction in all processes. With this study we pretend a comparative analysis of the effectiveness of teaching low-level processes at the level of handwriting, low-level processes at the level of spelling, or high-level processes of self-regulation of textual planning through digital technologies, as well as their summative effect on improving the writing competence of students in the first year of Primary Education. The sample of this study comprises 504 students from León with a control condition (N=224) and an intervention condition (N=280). Therefore, we have designed an instructional software with 3 modules (spelling, handwriting and planning) based on instructional practices with scientific evidence. Finally, the effect of the intervention will be analysed through 4 measures: handwriting accuracy, handwriting

fluency, spelling and compositional quality. At the moment, the study is currently being implemented, so the results obtained will be presented at the conference. This is part of the project with Reference: TED2021-132647B-I00, funded by MCIN/AEI/10.13039/501100011033 and by the European Union "NextGenerationEU"/PRTR"

Critical literacy during the first year of primary school

Keywords: Critical Thinking, Primary Education, Teacher Professional Development, Writing / Literacy

Presenting Author: Desirée Fristedt, Department of Swedish, Sweden

Critical literacy explores interactions of language and power, and addresses social issues about power, equity and justice (Comber 2015; Connolly 2017; Janks 2010). In education, critical literacy is considered a textual practice that encourages students to explore how texts position themselves and the world (Janks, 2013; Freire, 1972; Luke & Freebody, 1999). Research on the teaching and learning of critical literacy in the early school years, is, however, scarce, and there is a need to further explore how to best support young children's development of critical literacy. The aim of this study is to develop teaching practices in the first year of primary school that promote students' critical literacy. The study is conducted as part of an eight-month long combined research and professional developmental project aiming to develop teaching practices supporting young students' critical literacy. The Interdependent Framework for Critical Literacy Education (Janks, 2013) was used for planning, implementing, and evaluating the project. According to the framework, it is essential that students adopt the role of a text analyst and learn how to examine and analyze texts in relation to *power*, *diversity*, *access*, and *design/redesign*. The project was based on an action research model emphasizing the joint learning between the researcher and the participating teacher and students (McAteer, 2013). Methods for data collection included audio recordings of planning sessions with teachers, observations and video recordings of lessons, and samples of student work. The tools of critical content analysis (Krippendorff, 2004) was used to examine the material. Findings from initial analyses indicate that it is possible to develop instruction that promotes young students' critical literacy. In this talk, I present initial findings that show that instruction based upon the Interdependent Framework for Critical Literacy Education (Janks, 2013) encourages students to adopt a critical approach to speaking, reading and writing.

Students' Performance Goals as Predictors of Achievement in Language: A cusp Catastrophe model

Keywords: Achievement, Goal Orientations, Secondary Education, Writing / Literacy

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

The current research delves into exploring the impacts of performance goals, specifically performance approach and performance avoidance, through the lens of nonlinear dynamical systems. To address this, cusp catastrophe models are employed to analyze students' language learning performance, with achievement goal orientations serving as control variables. Data from a study, focusing on Modern Greek language (543 students), at the seventh-grade level, was utilized. The conceptual model guiding the study was force field dynamics, tested through cusp analysis using the difference between the two performance goals as the asymmetry factor and their sum as the bifurcation factor. The cusp models were superior compared to their linear counterparts. The outcomes, aligning with prior research, underscore the significance of adopting a complex dynamical system perspective in educational psychology. Specifically, the bifurcation effect resulting from performance approach-avoidance dynamics offers a more nuanced explanation of the maladaptive role played by the involved goal orientations. The discussion delves into the implications of the findings for current goal theories.

Session F 7

26 June 2024 16:00 - 17:30

Aula 4

Poster Presentation

Cognitive Science, Educational Policy and Systems, Learning and Special Education, Lifelong Learning, Teaching and Teacher Education

Understanding and Supporting Learners with Special Educational Needs

Keywords: Cognitive Skills and Processes, Communication Skills, Comprehension of Text and Graphics, Educational Policy, Eye Tracking, Foreign and Second Language Acquisition, Game-based Learning, Gifted and Talented Students, Inclusive Education, Learning and Developmental Difficulties, Learning and Developmental Disabilities, Learning Approaches, Lifelong Learning, Multimedia Learning, Quantitative Methods, Reading, Social and Educational Injustice, Special Education, Teaching / Instructional Strategies, Tool Development, Writing / Literacy

Interest group: SIG 02 - Comprehension of Text and Graphics, SIG 07 - Technology-Enhanced Learning And Instruction, SIG 15 - Special Educational Needs

Chairperson: Ana-Maria Purcar, Babes-Bolyai University, Romania

All eyes on me! Stories comprehension and audiovisual integration in population with ASD

Keywords: Communication Skills, Eye Tracking, Inclusive Education, Special Education

Presenting Author: Nadina Gómez-Merino, University of Valencia / Interdisciplinary Research Structure for Reading Research (ERI Lectura), Spain; **Co-Author:** Inmaculada Fajardo, University of Valencia, Spain; **Co-Author:** Alejandro Téllez, University and Polytechnic Hospital La Fe, Valencia, Spain; **Co-Author:** Marta Lizarán-Villalba, Health Research Institute La Fe, Valencia, Spain; **Co-Author:** Ana García-Blanco, Health Research Institute La Fe, University and Polytechnic Hospital La Fe, Valencia, Spain

The classroom environment, often surrounded by background noise, poses challenges for students in comprehending speech. Speech audio-visual integration skills, including visual cues like mouth movements, play a crucial role in helping students with typical development to perceive speech in adverse listening conditions. While typically developing students use speech visual cues such as lip reading, in challenging linguistic situations, the role of these cues, remains unclear for students with autism. Other studies have primarily focused on the perception of syllables or words, but this research aims to explore audio-visual integration during discourse comprehension, mirroring the complex nature of language comprehension in class. Aim. To describe the audiovisual integration skills of a group of school-age children with autism and normal IQ by analysing their eye movement patterns (mouth and eye fixations) during a listening comprehension task. Participants. So far, data has been collected from 11 children with autism (age range= 5-11 years old) and normal IQ (>80). We also plan to recruit a typically developing control group comparable to the group with autism in chronological age and gender. Experimental task. Participants completed a story-comprehension task. Stories were presented orally in video format and in three conditions: audio-visual (the child could see the face and the mouth movements of the speaker), audiovisual + noise (the child could see the face and the mouth movements of the speaker and story presentation was accompanied by babbling noise), and only audio (the child could only see a still picture of the speaker). After listening to the stories, participants were asked to answer a set of comprehension questions. Preliminary results will be presented at the conference based on the available data at that time. This study holds significance in understanding the challenges faced by children with autism in the classroom, contributing valuable insights for educational support strategies.

Learning and Generalisation of Pictograms in Minimally Verbal Autism: A Study with Eye Movements

Keywords: Comprehension of Text and Graphics, Eye Tracking, Inclusive Education, Learning and Developmental Disabilities

Presenting Author: Gema Erena-Guardia, University of Seville, Spain; **Co-Author:** David Saldaña, Universidad de Sevilla, Spain

Minimally verbal autistic children and adults use pictograms to communicate and move in limited environments, although they initially struggle to relate images to their referents. In addition, they can have difficulties generalising this learning to other similar objects and different situations. Although pictograms are widely used to improve cognitive accessibility of physical environments and are used in TEACCH-based training methodologies, there is a lack of research on the learning processes involved in their acquisition by these children and adults with more extensive support needs. We aim to: (1) explore what these children learn from pictograms, (2) determine where they focus their attention in their initial processing of pictograms, and (3) whether they can generalise their use across different contexts or pictogram designs. We present the results obtained from the training and generalisation of pictograms with a sample of 22 minimally verbal autistic participants, all of whom are from specific autism classrooms or specialised centres (5 girls with an average age of 9.87 years and 17 boys with an average age of 10.23). We trained them on series of pictograms with matching tasks and experimentally manipulated the design of the pictograms and prototypes of the referents to evaluate whether they generalised the meaning of the pictogram. Additionally, we included eye-tracking measures using the Tobii

TX300 eye tracking tool to assess pictogram processing. We also compared the results with previous research on learning and generalisation in autism to provide suggestions and future research directions to advance the design and use of pictograms that improve cognitive accessibility in this population.

Reading Comprehension and Executive Function in Autism Spectrum Disorder and Attention Disorders

Keywords: Cognitive Skills and Processes, Eye Tracking, Learning and Developmental Difficulties, Reading

Presenting Author: Paula Barea-Arroyo, University of Seville, Spain; **Co-Author:** Pablo Delgado, University of Seville, Spain; **Co-Author:** Gema Erena-Guardia, University of Seville, Spain; **Co-Author:** Vanessa Fernández-Torres, Facultad de Psicología. Universidad de Sevilla., Spain; **Co-Author:** Joaquín Ibañez-Alfonso, Layola Andalucía, Spain; **Co-Author:** Francisco Javier Moreno-Perez, University of Seville, Spain; **Co-Author:** Martina Micai, Istituto Superiore di Sanità, Italy; **Co-Author:** Juan José Navarro-Hidalgo, University of Seville, Spain; **Co-Author:** Miriam Rivero-Conteras, University of Seville, Spain; **Co-Author:** Adrián Solís-Campos, Universidad de Sevilla, Spain

Reading comprehension is commonly attributed to proficient word decoding and language comprehension. However, recent discussions emphasize the role of executive function processes in addition to traditional factors. This study focuses on the role of executive function in reading comprehension in ADHD and ASD populations. The study aims to (1) determine how readers with ASD and ADHD utilize information from texts regarding reading goals and strategy selection, (2) assess their use of cues in texts to find relevant information, and (3) evaluate the role of metatextual knowledge and executive function in the development of reading strategies. The study comprises two experiments. In Experiment 1, participants read narrative texts with titles reflecting the theme or presenting a question. Literal and inferential recall questions followed, assessing comprehension strategies. In Experiment 2, participants read expository texts with literal and relational questions. Texts may or may not contain textual markers. In Experiment 1, higher accuracy for literal questions is expected, with the question condition showing higher accuracy than the title condition. This effect is anticipated to be smaller in the ASD group and even smaller in the ADHD group. Planning and metatextual knowledge are expected to predict eye movement measures, rendering group variability nonsignificant. In Experiment 2, integration question accuracy is expected to be lower for all readers. Titles are anticipated to improve understanding, with a diminishing effect in ASD and ADHD groups. However, group effects are expected to become nonsignificant when considering metatextual knowledge and planning variables. Readers with autism and ADHD are expected to exhibit less strategic behavior than the typically developing group.

Teaching Novel Vocabulary with Enriched Multimedia to Young Deaf/Hard-of-Hearing Persons

Keywords: Eye Tracking, Foreign and Second Language Acquisition, Multimedia Learning, Teaching / Instructional Strategies

Presenting Author: Hülya Aldemir, Universidad de Sevilla, Spain; **Co-Author:** David Saldaña, Universidad de Sevilla, Spain; **Co-Author:** Isabel R. Rodríguez-Ortiz, Universidad de Sevilla, Spain

Deaf/Hard-of-Hearing (DHH) persons might show delays in language development compared to their hearing peers due to lack of sufficient support in access to language input. Vocabulary development is one of the ways to improve their general language skills. Previous systematic reviews and meta-analyses revealed that many aspects of vocabulary teaching for young DHH populations are still lacking, such as comparisons between different visual aids (e.g. gestures or speechreading). In response to this, we have developed a series of eye-tracking studies on a tablet and computer for DHH participants aged 8-16 in which we use visual aids such as (1) static iconic gestures and images, (2) dynamic iconic gestures and images, and (3) speechreading videos. We hypothesize that observation and enactment of iconic gestures and use of speechreading will result in higher accuracy in learning new words compared to observing only images or reading the descriptions of target words without any visual cue. Use of eye-tracking will help us reveal what type of visual aids DHH participants prefer to focus on as a strategy of learning new words, through analyses of fixation numbers and durations on target words and visual cues. Moreover, we investigate the exposure of participants to digital media to see whether their interaction with visual support on technological devices is facilitated by their previous experience. While our data collection is still ongoing, we will discuss the results we obtained and compare them with previous research to provide an overview of advances and suggestions for future research on teaching vocabulary to young DHH populations.

Interventions for Adults with Low Literacy Skills – Results from a Systematic Literature Review

Keywords: Learning and Developmental Difficulties, Learning Approaches, Lifelong Learning, Writing / Literacy

Presenting Author: Moritz Butscheidt, German Institute for Adult Education - Leibniz Centre for Lifelong Learning, Germany

Abstract One in five adults in the OECD-countries is considered low-literate (OECD, 2019). Many adults, despite of having received formal school education, do not possess literacy competences necessary for participation in everyday life (OECD, 2019). Reading and writing interventions have been shown to effectively improve adult learners' literacy skills (Kindl & Lenhard, 2023), yet low-literate adults may have other support needs than an improvement of reading and writing skills. Interventions may target other aspects of literacy, such as literacy practices, or support adults in different areas of their lives. A systematic literature review is therefore carried out, to analyze the state of knowledge on adult literacy interventions, taking into account training methods with diverse focuses. Fives databases have been searched for eligible studies in English and German, without restriction to publication year or country of origin. Preliminary results indicate that different types of interventions can be effective in supporting adults in their literacy development. Interventions can have a more directive, school-like focus on specific skills, or offer authentic, true-to-life support for participants. Progress is not limited to improvement in literacy skills and sub-skills, but also includes literacy practices, participants' social and occupational lives, and aspects of family literacy.

The consideration of adaptive behavior in the assessment for special educational needs in Germany

Keywords: Educational Policy, Quantitative Methods, Social and Educational Injustice, Special Education

Presenting Author: Melina Agha, Europa-Universität Flensburg, Germany; **Co-Author:** Steffen Siegemund-Johannsen, Institute of Special Education - Europa-Universität Flensburg, Germany

The measurement of an individual's adaptive behavior (AB) is, alongside the determination of the person's intellectual functioning, an internationally agreed criterion for the diagnosis of intellectual disability (AAIDD 2023; WHO 2022). AB is a composite of conceptual, social and practical skills and enables an individual to function in everyday life in modern democracies (Tassé 2017; Dworschak & Kölbl, 2022). It's said to be adequate when a person can successfully meet these challenges. Pedagogic In order for a student to gain access to material and human resources, the German Education Policy (GEP) has legally mandated a Special Educational Needs (SEN) assessment to examine a holistic picture of the individual's strengths and weaknesses and to predict his or her learning (KMK 2021). The decentralization of Germany's federal structure is leading to increased power in decision-making, but also in educational legislation. The authors' previously unpublished findings on the consideration of AB in SEN assessment show a high degree of fragmentation of responsibilities, legal and administrative provisions and their availability, completeness and comprehensiveness. The results show that at the controlling and decentralizing level of education policy in each state, AB is not given the same consideration as intellectual abilities and IQ in SEN assessment. Questionnaire procedures or scales for the assessment of AB are not mentioned in any of the educational administrative regulations, although they are a fundamental part of the diagnosis of intellectual disability. Therefore, this study aims to identify the current methods used by SEN teachers to verify AB in SEN assessments. We identify systematic and structured differences in approach that are related to state educational policy regulations, but are made by SEN teachers who execute SEN assessments.

G.I.F.T.E.D.: Games and Inclusion For Teacher Education

Keywords: Game-based Learning, Gifted and Talented Students, Special Education, Tool Development

Presenting Author: Maria Margarida Frade dos Santos, Faculdade de Motricidade Humana - Universidade de Lisboa; ISAMB, FM/UL; CeIED - Centro de Estudos Interdisciplinares de Educação e Desenvolvimento, Universidade Lusófona; Aventura Social Associação, Portugal; **Co-Author:** Anabela Caetano Santos, Aventura Social Associação; Universidade Aberta; ISCTE - Instituto Universitário de Lisboa, Portugal; **Co-Author:** Roberta Renati, Noah Innovation for Health, Italy; **Co-Author:** Celeste Simões, Faculdade de Motricidade Humana - Universidade de Lisboa; ISAMB-FM/UL, Portugal; **Co-Author:** Paula Lebre, Faculdade de Motricidade Humana - Universidade de Lisboa (FMH-UL); INET-MD, FMH-UL, Portugal

Research indicates that gifted students learn differently and have unique academic and socioemotional needs. However, they often do not receive adequate support in school, and the lack of identification can lead to school disaffection and distress. Teachers in Europe do not receive proper education/training concerning these students. The project GIFTED - Game and Inclusion For Teacher Education will address the need for training teachers in gifted and talented education by designing and implementing an online training programme to support teachers' skills development in gifted and talented education. This digital

game-based learning environment will promote the experiential learning of teachers, giving them tools to recognize these students, interact with them and tailor their learning experience in an inclusive classroom context. The game-based training also stimulates self-reflective practice, problem-solving, decision-making, and creativity in teaching. A digital training tool will help teachers adapt their practice to requests and the complex and diversified needs of students who require concrete actions beyond mechanically learning contents. The training and use of the game aim to also improve students' and teachers' socioemotional competencies and positive affect. Moreover, by building teachers' capacity on inclusion strategies, this project aims to positively impact student-student and student-teacher relationships, students' well-being, and classroom climate. The program is still in course and will be finished at the end of 2024. At this moment we are undergoing the pilot, and its results will be presented and discussed further.

SIG Invited Symposia 1

27 June 2024 09:00 - 10:30

Aula 1

JURE 2024 SIG Invited Symposium

Motivational, Social and Affective Processes

The Interplay of Peer Relationships and Student Motivation

Keywords: Emotion and Affect, Engagement, Goal Orientations, Motivation, Peer Interaction, Quantitative Methods, Self-determination, Social Interaction, Well-being

Interest group: SIG 08 - Motivation and Emotion

Chairperson: Elisabeth Höhne, Leibniz Universität Hannover, Germany

Organiser: Elisabeth Höhne, Leibniz Universität Hannover, Germany

Organiser: Alla Hemi, Bar Ilan University, Israel

Organiser: Martin Daumiller, University of Augsburg, Germany

Discussant: Alla Hemi, Bar Ilan University, Israel

The goal of this symposium is to unite research investigating the interplay of peer relationships and motivation and to provide directions for moving the field forward. Peer relationships are central to students' social environment at school (Kilday & Ryan, 2022). When students interact with their peers, their individual skills and motivational beliefs come into play, influencing how relationships are formed. Similarly, peer relationships can impact the development of skills and the adoption of new beliefs (Bukowski et al., 2014). As students grow older, their focus on peers increases as they strive for independence from adults (Rodkin & Ryan, 2012). Therefore, in order for teachers to cultivate an optimal social and developmental context for learning, it is important to expand our knowledge of how peer relationships contribute to students' motivation and academic development (Kilday & Ryan, 2022). The symposium comprises four complementary papers that combine perspectives from different motivation and peer relationships perspectives, methodological approaches, and data from international samples. Paper 1 employs cross-legged panel models to test the reciprocal longitudinal relationships between adolescent students' motivation and their perceptions of different facets of peer relationships in class. Paper 2 employs social network analyses to examine associations between students' achievement goals and their position in the classroom network. Paper 3 uses social network analyses to test associations between the motivational foundations of students' academic help-seeking from peers and whether help-seeking, in turn, reduces dropout intentions. Finally, Paper 4 utilizes a person-centered approach to provide insights into the combined impact of in-person and online social achievement goals on students' daily life and psychological wellness.

The Essential Role of Peer Relationships in Students' Motivation During Adolescence

Presenting Author: Fabian Schimmelpfennig, University Greifswald, Germany; **Co-Author:** Diana Raufelder, University Greifswald, Germany

Mid-adolescence is a critical developmental stage during which peer relationships become increasingly important (Kilday & Ryan, 2022; Rodkin & Ryan, 2012), while academic motivation tends to reach its nadir (Gnambs & Hanfstingl, 2016). Although it is known that positive relationships with peers can promote students' motivation (Kindermann, 2016) and high motivation can benefit more positive social behaviors (see Kilday & Ryan, 2022), there are no studies that have examined this association reciprocally over time. Accordingly, this study aimed to test the potential reciprocal relationship between mid-adolescent students' motivation and their perceived peer relationships in class by considering (a) different facets of peer relationships, (b) peculiarities of peer relationships in high-track schools and (c) the quality of motivation in a differentiated way. Questionnaire data from 779 high-track students from Germany (Rangeage = 12-15; 57% female) have been used to test the interplay between students' perception of peers as positive motivators, peers as negative motivator, the student-student relationship and the quality of motivation (i.e., extrinsic, introjected, identified regulation, intrinsic motivation).

A latent cross-lagged panel model (CLPM) considering students' grades was run to examine the interplay. The results of the CLPM show students' perception of peers as positive motivators and positive student-student relationships at the beginning of eighth grade positively predict students' identified regulation as the end of ninth grade. Whereas students' perception of peers as negative motivators negatively predicts their introjected and identified regulation over time. Fostering peers as positive motivators in school might be beneficial for fostering students' quality motivation, particularly for identified and introjected regulation. Poor grades can encourage the tendency to let peers exert influence as negative motivators.

Peer Relationships and Students' Achievement Goals - How are They Interconnected?

Presenting Author: Alla Hemi, Bar Ilan University, Israel; **Co-Author:** Nir Madjar, Bar-Ilan University, Israel; **Co-Author:** Yisrael Rich, Bar Ilan University, Israel; **Co-Author:** Martin Daumiller, University of Augsburg, Germany

Achievement goals are important for students' well-being, collaboration with peers, and academic achievement. According to theory and research, achievement goals are related to the social context of students. As interaction with peers is a key part of everyday school life, peer relationships should also be relevant to students' achievement goals. However, there is limited research on this topic. Therefore, we conducted a study to examine the relationships between students' achievement goals and their role in social networks within the classroom. We hypothesized that mastery-approach goals would be positively associated with social network centrality, while performance-avoidance goals would be negatively associated with social network centrality. We examined 472 high-school students (52% female; Mage = 15.71) from 23 classrooms, and analyzed the data using multilevel social network analyses. Our findings revealed that mastery-approach goals were positively associated with outdegree, closeness, and betweenness centrality measures. In contrast, performance-avoidance goals were negatively associated with indegree centrality. Interestingly, we found a positive correlation between performance-avoidance goals and outdegree centrality, suggesting that students with these goals may attempt to engage in more social interactions with their peers but are unsuccessful in doing so. These results demonstrate the role of achievement goals in students' social positioning in the classroom. They can inform interventions to support both adaptive achievement goals and central social positioning in the classroom.

Academic Help-Seeking as Mediator Between Student Motivation and Dropout Intentions

Presenting Author: Elisabeth Höhne, Leibniz Universität Hannover, Germany; **Co-Author:** Lysann Zander, Leibniz Universität Hannover, Germany

The present study examined the motivational foundations of students' academic help-seeking and whether help-seeking, in turn, reduces dropout intentions. Focusing on first-year students in two higher education domains that are believed to require very different attributes in order to succeed and that have an opposite gender ratio – the male-dominated STEM domain of computer science and the female-dominated HEED domain of education – we combined self-reported with sociometric data in our analyses. Our results show that the overall nomination activity in the academic help-seeking network was larger in education than in computer science. Moreover, we found that academic help-seeking mediated the relationship between utility value and dropout intentions among computer science students, while none of the expectancy-value beliefs predicted academic help-seeking among education students. In both domains, we did not find a gender difference in the relationship between expectancy-value beliefs and academic help-seeking, but that higher expectancy-value beliefs were directly related to lower dropout intentions.

Associations of In-person and Online Social Achievement Goals Profiles and Psychological Illbeing

Presenting Author: Boreum Kim, Ball State University, United States; **Co-Author:** Sungok Serena Shim, Ball State University, United States

Existing research has documented the impact of social achievement goals (i.e., social-development, social demonstration-approach, and social-demonstration-avoidance goals) on various aspects of students' daily lives and school adjustment. However, with the increasing importance of students' online social interactions and the substantial time they spend fostering digital relationships, it is crucial to examine both offline and online dimensions of social achievement goals. This study aims to explore the combined impact of in-person and online social achievement goals on students' daily life and psychological wellness, utilizing a person-centered approach. Drawing from a sample of 366 U.S. college students, we aimed to identify distinct profiles of in-person and online social achievement goals and examine their associations with daily social media interference (minor disruption, major loss, and weekday/weekend usage) as well as psychological ill-being indicators (depression, stress, and anxiety). Latent Profile Analysis delineated four distinct groups exhibiting varying levels of social achievement goals in both in-person and online settings: the High Social Goal group (16%), the Medium Social Goal group (45%), the Medium Avoidance-focused Social Goal group (19%), and the Low Social Goal group (19%). Notably, the High Social Goal group reported the highest daily social media interference and psychological ill-being, whereas the Low Social Goal group reported the least daily social media interference and psychological ill-being. Between the two groups with a medium level of social achievement goals in in-person and online settings, the Medium Social Goal group reported more social media interference than the Medium Avoidance-focused Social Goal group. The findings suggest that students' desire to develop social relationships and popularity inevitably allocates more time to social media, thereby leading to disruptions in daily life as well as potential negative impacts on their mental well-being. Notably, individuals who prioritize avoiding negative social demonstrations seem to effectively prevent daily disruptions caused by social media.

SIG Invited Symposia 2

27 June 2024 09:00 - 10:30

Aula 5

JURE 2024 SIG Invited Symposium

Civic and Citizenship Education for Developing Civic Competences among Youth: Theory and Practice

Keywords: Attitudes and Beliefs, Citizenship Education, Cognitive Development, Competencies, Conceptual Change, Developmental Processes, Dialogic Pedagogy, Large-scale Assessment, Migrant / Refugee and Minority students, Pre-service Teachers, Quantitative Methods, Self-efficacy, Teacher Professional Development

Interest group: SIG 13 - Moral and Democratic Education

Chairperson: Emilie Vandeveld, KU Leuven - University of Leuven, Belgium

Chairperson: Linde Stals, KU LEUVEN, Belgium

Discussant: Nina Welsandt, University of Duisburg-Essen, Germany

In recent decades, there has been a surge in attention towards civic and citizenship education (CCE) among scholars, policy makers, and practitioners (Schulz et al., 2018, 2023; van Driel et al., 2023). Specifically, CCE has been advocated as a response to threats to democracy, aiming to promote civic competences and – thus – democratic endurance and social cohesion (Abs, 2021; Tuhuteru, 2023). Despite this heightened focus, recent research, including the recently released ICCS 2022 results, reveal a stark paradox: the decline in civic competences among today's youth (Joris et al., 2022; Ryen & Jøsok, 2023; Schulz et al., 2023). Specifically, compared to the results of ICCS 2016, the ICCS 2022 report describes a significant decline in trust across various institutions – particularly in European countries –, civic self-efficacy, civic knowledge, and expected electoral participation, which coincide with no significant increase in the endorsement of gender equality and equal rights for all ethnic groups (Schulz et al., 2023). Moreover, despite CCE's aim in playing a compensatory role for the effect of socioeconomic status and migration background on civic outcomes, disparities in students' civic attitudes and knowledge based on background characteristics persist (Mennes et al., 2023; Schulz et al., 2023; Ziemes et al., 2020). Hence, it seems that despite the ongoing development of new CCE approaches, curricula, and programs, a gap in understanding how to effectively promote civic knowledge, attitudes, and values through CCE remains (Naval et al., 2002; Joris et al., 2022). This symposium invites both theoretical and empirical contributions that aim to explore how CCE can make a difference in ensuring the cultivation of informed, knowledgeable, and engaged citizens for the future, and how differences in students' backgrounds can be mitigated. This can be through both single-country or comparative studies. Papers utilizing ICCS 2022 datasets or informed by ICCS scales are particularly encouraged.

Does political value (in)congruence in class facilitate open classroom climate?

Presenting Author: Venla Hannuksela, Tampere University, Finland; **Co-Author:** Josefina Sipinen, Tampere University, Finland; **Co-Author:** Miikka Korventausta, University of Turku, Department of Teacher Education, Finland

Open classroom climate is considered an effective tool for schools to fulfil their task in giving young people necessary prerequisites to participate in the political life of their society. Yet surprisingly little is known about how open classroom climate can be cultivated and which factors impede its development. Particularly, while comprehensive education in modern societies gathers students from diverse backgrounds and thus offers possibilities for cross-cutting discussions, diversity may increase risks of unpleasant conflicts. Therefore, we examine the relationship between political value incongruence among classmates and an open classroom climate among 15–16-year-old Finnish and Swedish-speaking Finnish pupils in the final year of comprehensive education (N = 5,220). We examine this connection both directly and indirectly through students' sense of class community. Additionally, we investigate the moderating effect of language minority status on these relationships. Utilising a generalized structural equation modelling framework, we find a direct and positive connection between incongruence in sociocultural political values and an open classroom climate. However, value incongruence is negatively linked to class community, thereby establishing an indirect and negative connection to an open classroom climate. In majority-language classrooms, the total effect of incongruence in political values on the open classroom climate is positive. Conversely, in minority-language classes, greater incongruence in political values yields a negative total effect.

The Conceptualization of Rational Political Trust among Flemish Young and Late Adolescents

Presenting Author: Linde Stals, KU LEUVEN, Belgium; **Co-Author:** Maria Magdalena Isac, University of Bath, United Kingdom; **Co-Author:** Ellen Claes, KU Leuven, Belgium

The evaluative, specific nature of political trust necessitates a coherent, object- and domain-specific judgement grounded in empirical knowledge about the system and its functioning. This study investigates whether this rational conception of political trust is more pronounced among late adolescents compared to their younger counterparts. Applying measurement and structural invariance testing and structural equation modelling to data from two cross-sectional surveys with identical measures conducted in Flanders (Belgium), we compare a two-dimensional construct of political trust and its associations across 14- and 18-year-olds. Our findings indicate that both young and late adolescents equally differentiate in their trust orientations towards order and representative institutions, suggesting that already from a young age, citizens are able to judge different institutional branches on their own merits. However, late adolescents' political trust is less influenced by trust in non-political domains, and informed more strongly by political knowledge. These findings contribute to our understanding of political trust formation during early and late adolescence, offering insights into the meaningful interpretation of trust attitudes among young, emerging citizens.

Political self-efficacy development through political socialization

Presenting Author: Venla Hannuksela, Tampere University, Finland

Political socialisation refers to the processes through which people obtain knowledge, attitudes, and behaviours that are politically relevant in their society. This can be seen as a social learning process that happens in an interaction between the individual and socialisation agents, such as family and school. In this theory chapter of my PhD, I intend to go through several aspects of political socialisation and its relationship with political self-efficacy, which signifies an individual's personal sense of one's own competence to understand and to participate effectively in politics. First, I discuss what political socialisation is, particularly as social learning. Second, I analyse how socioeconomic status translates to political self-efficacy through political socialisation. Third, I go into how civic education, particularly open classroom climate, can and cannot promote political self-efficacy and mitigate inequalities in political engagement. The final discussed perspective is the relationship between social capital and political self-efficacy from the point of view of political socialisation.

The Development of Pre-Service Teachers' Civic Education Cognition During Teacher Training

Presenting Author:Emilie Vandeveld, KU Leuven - University of Leuven, Belgium

This paper investigates the development of pre-service teachers' civic education (CE) cognition during teacher training. CE is increasingly recognized as vital for fostering active citizenship and creating just societies, especially in the face of contemporary challenges in Western democratic societies. However, longitudinal data on the extent to which teacher training programs equip pre-service teachers with the necessary competences for cultivating responsible and active citizens is limited. Moreover, there is a gap in understanding pre-service teacher cognition, particularly in the context of CE, despite its crucial role in shaping instructional strategies and student outcomes. To address this gap, a longitudinal study surveyed first-year pre-service primary and secondary education teachers in Flanders twice during their training. The survey focused on five CE cognition variables measured at the beginning and end of training, including perceived preparedness to teach CE, willingness to address political and social topics, and openness to creating an open classroom climate. Preliminary analyses suggest a significant increase in pre-service teachers' feelings of preparedness and slight decreases in their willingness to address political and social topics over the training period. Differences according to pre-service teachers' gender, program (bachelor-master), and level of political and social knowledge were also detected. The findings highlight the importance of understanding pre-service teachers' CE cognition development, as it directly shapes teaching practices and instructional choices during CE instruction.

SIG Invited Symposia 3

27 June 2024 09:00 - 10:30

Aula 11

JURE 2024 SIG Invited Symposium

Eye Tracking in Educational Research: How can we understand the underlying cognitive processes?

Keywords: Attitudes and Beliefs, Cognitive Skills and Processes, Comprehension of Text and Graphics, Eye Tracking, Gender Issues, In-service Teachers, Migrant / Refugee and Minority students, Mixed-method Research, Multimedia Learning, Pre-service Teachers, Teacher Professional Development, Video-based Learning

Interest group: SIG 17 - Methods in Learning Research

Chairperson: Kateryna Horlenko, Vytautas Magnus University, Lithuania

Organiser: Sylvia Gabel, University of Augsburg, Germany

Discussant: Sylvia Gabel, University of Augsburg, Germany

Complex learning situations require high-level cognitive processes. We need to understand these processes to enhance learning progress and teacher professionalism. Eye tracking is an established method to uncover cognitive processes by analyzing learners' gaze behavior. However, eye-tracking data should be combined with other data sources to better interpret the underlying visual and cognitive processes. In this symposium four papers present their multi- and mixed methods approaches and the triangulation of eye tracking data with other data sources. In the first paper, learners watched animations with three levels of signaling as situational cues to foster cognitive processing. Eye tracking data was collected to understand how prior knowledge and signalization interact with cognitive processes. To capture cognitive load, eye-tracking data was triangulated with subjective questionnaire scales. This triangulation was important to be able to interpret the eye tracking data depending on the context. In the second paper, pre-service teachers' gaze was analyzed to investigate their professional vision by recording their gaze during classroom video viewing. To understand the differences between pre-service teachers and university teacher trainers, eye-tracking data were combined with verbal data. This was further explored in the third paper, as mobile eye tracking was implemented during teaching and combined with cued retrospective recall. This allowed to explore visual attention and reasoning differences in various timestamps (prior, during and after the lesson). In the last paper, pre-service teachers' gaze was investigated with attitudes measurements to understand how attitudes co-occur with their visual attention. To explore this, the authors combined implicit and explicit attitudes with eye tracking data. This symposium aims to demonstrate that triangulating eye-tracking data with different data sources (questionnaires, interviews, attitude measurements) in the context of multi- and mixed methods studies is a valuable approach to assess and understand the context of the underlying cognitive processes.

Eye-Tracking Study on Signal Accessibility & Prior Knowledge Effects in Learning from Animation

Presenting Author:KILLYAM FORGE, University of Toulouse, CLLE, France; **Co-Author:**Julie Lemarié, University of Toulouse, CLLE, France; **Co-Author:**Pierre-Vincent Paubel, University of Toulouse, CLLE, France; **Co-Author:**Jean-Michel Boucheix, University of Bourgogne, Dijon, LEAD-CNRS, France

The inconsistent findings in the scientific literature on the signaling effect in learning from educational animations makes necessary a better understanding of the moderators that influence signaling effectiveness, particularly prior knowledge. This eye-tracking study aimed to investigate the joint effects of prior knowledge and signaling accessibility on learning performance and cognitive load of learners studying from an entirely visual animation. One hundred thirty-six participants, with ninety-one low prior knowledge learners (LPK group) and forty-five high prior knowledge learners (HPK group), watched an animation about piano systems with three levels of signaling: high accessibility, low accessibility, and no signal. Results revealed an interaction effect between prior knowledge and signaling condition only on scores on the local kinematics comprehension test. HPK/Control and HPK/Low accessibility learners outperformed LPK learners in the same conditions, while no distinction was observed between HPK/High accessibility and LPK/High accessibility groups, suggesting that highly accessible signaling enhanced LPK learners' performance, while diminishing that of HPK learners. Additionally, self-reported cognitive load measures indicated that only highly accessible signals reduced the overall cognitive load experienced by LPK learners. These findings, while subtle, suggest that signaling supports LPK learners' learning only when they have a sufficiently high level of accessibility. Finally, pupillometry results showed an interaction effect between prior knowledge and signaling condition, indicating that cognitive load tends to be lower among HPK learners when no signaling is added to the animation, suggesting an expertise reversal effect.

Professional Vision in Belgian Teacher Trainers & Pre-Service Teachers

Presenting Author:Valérie DUVIVIER, Université de Mons, Belgium; **Co-Author:**Antoine Derobertmeasure, Université de Mons, Belgium; **Co-Author:**Marc Demeuse, Université de Mons, Belgium

The professional vision of teachers is of great importance, as it guides their pedagogical actions and decisions during teaching situations. Van and Sherin (2008) identify two complementary processes in professional vision: observation and reasoning from that observation. Using a video extract, the study compares the professional vision of university teacher educators (UST; n=6) in French-speaking Belgium with that of the pre-service teachers (PT; n=19) they train. The analysis uses a mixed-methods approach, focusing on two processes of professional vision. Using an eye-tracker (GazePoint GP3HD), observation is assessed using oculometric indicators (fixations, visits and first views) to identify the subjects observed and the visual strategies employed. Regarding reasoning, verbal utterances are categorised to highlight the focal points and cognitive processes engaged by the UST and PT, following Vifquin and Frenay (2018). The results indicate significant differences between UST and PT, although both groups provided descriptive comments in approximately half of the cases. Analysis of the eye-tracking data revealed that the PT and UST exhibited comparable visual interest in the teacher on the screen (39% and 22,9%, respectively). However, there was a notable difference in the subjects of the comments and their frequency. PT commented on the teacher 4,1% of the time, in comparison with 32% for UST. Furthermore, UST employed dynamic visual strategies, characterised by more frequent revisits (significantly by the T tests) and shorter fixation times than PT. This results in more varied and balanced objects of observation in the UST, indicating a potential gap between observation and reasoning in the PT. The results make it clear that there are significant differences between the professional vision of UST and PT. The significance of these findings is further enhanced by the dearth of research on UST and the pervasive use of videos in teacher training.

Teachers' professional vision investigated through mobile eye tracking, CRR and survey data

Presenting Author:Maikki Pouta, University of Turku, Finland; **Co-Author:**Erno Lehtinen, University of Turku, Finland; **Co-Author:**Tuire Palonen, University of Turku, Finland

The study aims to investigate differences between experienced teachers' and student teachers' professional vision multifacetedly through eye tracking, cued retrospective recall (CRR), and preliminary judgments. Through methodological triangulation different aspects of teachers' situational skills can be investigated:

verbalizations in CRR present a teacher's reasoning whereas a teacher's eye movements reveal their visual focus of attention and preliminary judgments indicate a teacher's beliefs and knowledge. Four student teachers and four experienced teachers participated in a study. Before the lesson, participants evaluated their pupils' mathematical competencies with a preliminary judgment questionnaire. One mathematics lesson from each teacher was recorded with Tobii Pro Glasses 2 mobile eye-tracker. After the lesson cued retrospective recall was carried based on the video. A mixed methods video analysis was used to investigate participants' reasoning and visual attention during the video recording and in CRR. Based on survey data, a cluster analysis was carried out to form pupil groups based on teachers' preliminary judgments. Results suggest that despite profound reasoning student teachers attended significantly more on episodes including non-supportive instructions and indicated more shared attention in those compared to experienced teachers. With their focus of attention experienced teachers were significantly faster than student teachers. Preliminary findings of the judgment survey compared to participants' visual focus of attention revealed no correlation meaning situational factors to dominate a teacher's focus of attention over preliminary judgments. Triangulation of methods is beneficial for investigating the multifaceted nature of professional vision. Eye tracking offers possibilities for data gathering in authentic teaching situations, more in-depth analysis of visual focus of attention. It also increases the validity of recall methods such as CRR. Furthermore, the possibilities are also extended for professional training and participants' observations without their actions through video annotation tasks.

Pre-service teachers' attitudes towards heterogeneity: Connections with their gaze behavior

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

Teacher professionalism needs to ensure unbiased and equal interaction with every student in the classroom - independently their ethnicity, sexuality or gender. A prerequisite for this unbiased interaction is teachers' attitude towards these dimensions of heterogeneity. The aim of this contribution is to emphasize the significance and impact of pre-service teacher attitudes in dealing with student diversity. Implicit and explicit attitudes are explored, with a focus on the potential bias based on characteristics like ethnicity, sexuality and gender. We further employed eye-tracking technology to investigate whether pre-service teachers' attitudes align with their gaze towards ethnicity, sexuality and gender. Three studies are conducted, involving $N=83$, $N=78$ and $N=105$ pre-service teachers. The first study reveals a tendency of more fixations on ethnic minority students, contrary to the initial expectation. The second study shows that pre-service teachers have higher pupil dilation for information that is inconsistent with their attitudes. The third study indicates a visual preference for girls, in line with positive attitudes towards them. The correlation between attitude and gaze behavior suggests that pre-service teachers allocate more attention to students they favor. The discussion highlights the unexpected findings regarding ethnic minority students, raising questions about their perceived favorability in classrooms. Further, the larger pupil diameter tends to produce a higher cognitive engagement with information that is inconsistent with attitudes. All studies suggest various indications about a co-occurrence of attitudinal and visual preferences, emphasizing the importance of understanding the interplay between teacher attitudes and gaze behavior in diverse classrooms.

SIG Invited Symposia 4

27 June 2024 09:00 - 10:30

Aula 12

JURE 2024 SIG Invited Symposium

Culture, Morality, Religion and Education

Creating space for worldview dialogue in religious and worldview education

Keywords: Attitudes and Beliefs, Comprehension of Text and Graphics, Cooperative / Collaborative Learning, Cultural Diversity in School, Dialogic Pedagogy, Qualitative Methods, Religiosity and Spirituality, Secondary Education, Social Interaction, Teacher Professional Development

Interest group: SIG 19 - Religions and Worldviews in Education

Chairperson: Niina Putkonen, University of Helsinki, Finland

Organiser: Niina Putkonen, University of Helsinki, Finland

Discussant: Petra Juen, Austria

Pluralism in today's societies creates both new opportunities and needs for human interaction. Dialogue is considered one of the key tools for dealing with the diversity in education. Moreover, religious and worldview education has been characterized as an educational space for such a dialogue where respectful encounter between people who think and believe differently can be recognized and strengthened. In this respect, dialogue has also been valued in preventing social polarization. Meanwhile the religious and cultural diversity invites educators and educational institutions to rethink the representations of traditions and cultures they convey in and through education. This calls for a versatile and critical reflection on how different religions and worldviews are presented and encountered in the classrooms. This symposium discusses religious and worldview education as a place for worldview dialogue. It explores, what kind of worldview dialogue is topical in religious and worldview education and debates the elements that provide a dialogical space in education. Two questions relevant for the symposium arise: What kind of worldview dialogue does the religious and worldview education need? What kind of religious and worldview education does the worldview dialogue need? To achieve a comprehensive picture on the subject, the worldview dialogue is approached in different national contexts and through different religious education models from the perspectives of learning materials, teachers, and students. Furthermore, it is debated both from intra- and inter-religious perspectives.

Interreligious Cooperation in Austrian School Context. A dynamic network of interwoven perspectives

Presenting Author: Petra Juen, University of Innsbruck - Religious Education, Austria

Secularism and plurality are two well-known paradigms which shape the field of Religious and Worldview Education since several decades (Schweitzer et al. 2002.; Grümme & Pirner, 2023; Baumert & Teschmer, 2024). Religious and Worldview Education approaches these paradigms through multiple different studies, research interests and pilot projects (e.g. Riegel et al., 2023; Sejdini et al., 2017; Gmoser et al., 2024; etc.). The approach discussed in this contribution is the interreligious cooperation between different religiously affiliated individuals (teachers and principals) in the school context. The data is based on the authors qualitative-empirical dissertation theses. (Juen, 2023). Through exploring the cooperation and developing the results further, the following points are specifically approached in the presentation: The Austrian Context The complex network of interwoven perspectives and its different levels The fragility of this network Knowing that the Austrian context is quite unique regarding religious education in schools, the understanding and realisation of the interwovenness of perspectives (individual and systemic) can be revealing for various approaches in Europe. The different institutions in the background of the individuals, their understandings and structures influence and contribute to this interwovenness of the perspectives. For individuals the permanent challenge of being able to deal with multiple and even contrasting perspectives and strong normative guidelines is demanding. One major goal of this presentation is to raise awareness and focus on sensibilisation regarding interreligious concepts, implementing interreligious strategies and practices in the educational field. Although, the demand of interreligious cooperation in schools is present and the encouragement is necessary, it requires attentiveness, carefulness and mindfulness because of its complexity and fragility.

Depiction of Judaism and Islam in religious school textbooks and the perception of young people

Presenting Author: Julia Hofmann, Universität Tübingen, Germany

Textbooks provide access to interreligious learning by informing young people about religions such as Judaism and Islam. Therefore, images are used to depict Judaism and Islam. Textbook images tend to be seen as 'normative' by learners. Othering (cf. Freudling 2022), but also selfing processes may occur. Previous studies have analysed antisemitism in schools using Jewish people (cf. Bernstein, 2020) or textbook texts (cf. Spichal, 2015) for Judaism. Anti-Muslim resentment has been identified as a challenge for interreligious learning (cf. Khorchide et al., 2022). An empirical study of images of Islam and Judaism in Christian religious education (henceforth RE) is missing. This study provides an insight into how Judaism and Islam are portrayed in Christian RE textbooks and how they are perceived by learners. The images of Judaism and Islam in Christian RE textbooks and the ideas of young people in Christian RE reveal the ideas that people in RE bring to the dialogue. Through interreligious dialogue, religious, cultural and worldview diversity can be addressed in the classroom.

Worldview dialogue within “own religion”. Perspectives on dialogue in Islamic religious education

Presenting Author:Niina Putkonen, University of Helsinki, Finland

The purpose of this paper is to discuss worldview dialogue in Islamic religious education (henceforth IRE) and to examine dialogue in the IRE classrooms from intra-religious perspectives. Religious education in Finnish schools is organized in accordance with pupil's “own religion”, and there is one curriculum for IRE. Muslim pupils participating in IRE are from diverse linguistic, cultural, and denominational backgrounds. Pedagogy obviously plays an important role both in dealing and encountering with the diversity in the classrooms. In the current Finnish religious education curriculum intra-religious diversity is not only referred to as content but is also associated with dialogue skills (FNAE 2014; see Ubani et al. 2020). The results in this paper are based on interviews with IRE teachers (N=17) working in comprehensive schools in the capital region of Finland. The findings show that the teachers strive to address the contents related to the diversity of Islam in a way that takes into account the diversity of Muslims in the classroom. On the other hand, they balance tensions related to diversity and strive to strengthen cohesion by emphasizing the Ummah and what is common to all Muslims. *Difference* has been characterized essential for dialogue (see Schweitzer 2011; O'Grady 2019). In this paper, I will discuss IRE classes as dialogical space where Muslimness is navigated within the categories of sameness, difference, and diversity. Furthermore, the teacher's role in worldview dialogue in the classroom will be debated.

SIG Invited Symposia 5

27 June 2024 09:00 - 10:30

Aula 13

JURE 2024 SIG Invited Symposium

Challenges in Doing Research with Young Children

Keywords: Cultural Diversity in School, Early Childhood Education, Foreign and Second Language Acquisition, Mixed-method Research, Primary Education, Qualitative Methods, Quantitative Methods, Survey Research, Well-being

Interest group: SIG 05 - Learning and Development in Early Childhood

Chairperson: Valentina Pagani, Università di Milano Bicocca, Italy

Discussant: Valentina Pagani, Università di Milano Bicocca, Italy

This symposium aims to explore the methodological challenges that researchers encounter when conducting research with children, particularly those of a younger age.

In recent decades, socio-cultural, political, and academic research has experienced a significant transformation in the representation of children, their competencies, and rights. The UN Convention on the Rights of the Child and the 'new sociology of childhood' (Qvortrup,1987; Corsaro, 1997) have contributed to the recognition of children as competent actors and reliable informants, capable of providing valuable insights on all matters that affect them (O'Keane, 2008) provided that the appropriate methods are employed (Einarsdóttir, 2007).The symposium aims to encourage participants to reflect on the methodological dilemmas and challenges that arise when involving children in the research process. The discussion will draw on various research experiences, adopting qualitative and quantitative methods. The focus will be on the obstacles and incremental value associated with involving children in survey research and participatory research, as well as on possible solutions and tips to overcome some of those challenges. The symposium intends to provide insights into good practices for conducting research with children and to facilitate a constructive exchange of ideas and experiences.

The reliability of parents' statements on their child's well-being using the example of AID:A

Presenting Author:Inga Simm, German Youth Institute, Germany; **Co-Author:**Anja Linberg, German Youth Institute, Germany; **Co-Author:**Thorsten Naab, German Youth Institute, Germany; **Co-Author:**Susanne Kuger, German Youth Institute (DJI), Germany

Self-determination theory closely links children's well-being to key needs for autonomy, competence and relatedness (Deci and Ryan, 2002). The challenge is to capture children's own view on their well-being in large-scale studies, which are currently mainly based on information from respondents about children. However an adult's perceptions on children's own experienced well-being (Punch, 2002).By now little is known about (1) which methods are suitable for recording children's well-being in large-scale studies and (2) which correlations can be found between child and parent statements on children's well-being. The study "Growing up in Germany: Everyday Worlds" (AID:A) has been providing population-representative data on children, adolescents and young adults in Germany for many years. The data are collected as self-reported and proxy information. In the most recent wave, AID:A 2023, children aged five to eight years are surveyed themselves for the first time. Part of the questions on well-being contain special questions for this age group. The other part is based on the existing survey program for older children whose self-report was already considered in the last waves. The survey was extensively piloted and conducted by an interviewer. Answering options were visualized in a child-friendly way (e.g. smileys, thumbs).

The presentation examines the self-reports of around 1000 children aged 5-11 years and the information provided by their parents on their well-being in three central dimensions: Family (family climate), school (satisfaction with care) and peers (relationship quality).

The presentation will provide more detailed information on age-specific differences and comparisons with parents' views. The discussion focuses on the costs and incremental value of surveys with such young children.

Language education in Society 5.0

Presenting Author:MACHIKO KOBORI, Hosei University, Japan; **Co-Author:**Junko Matsuzaki Carreira, Tokyo Keizai University, Japan; **Co-Author:**Shigyo Tomoko, Shiraume Gakuen University, Japan; **Co-Author:**Wan-lih Chang, Ann Shih-Chien University, Taiwan; **Co-Author:**Lung-Hsun Hsu, Shih-Chien University, Taiwan; **Co-Author:**Hui-Yu Huang, Gu-shan Elementary School, Taiwan; **Co-Author:**Ping-Ju Liu, Shi-chou Elementary School, Taiwan

This study is a mid-term report of a Japan and Taiwan co-research study on undergraduate language teacher education in Society 5.0, a grant-in-aid activity supported by JSPS KAKENHI. It aims to give an insight into a reflection of primary English as a foreign language (EFL) pupils in Taiwan on their online English lessons provided by university undergraduate students from Japan. It argues, as a challenging aspect of this research investigation, for a mixed-method approach amalgamating a questionnaire survey and reflection comment to research young language learners within the context of utilising three different languages: Chinese, English and Japanese. The investigation was conducted in conjunction with online English lessons facilitated from Japan by undergraduate students in March 2024. Participants were 148 primary EFL pupils aged 11+ (boys: 79, girls: 69) attending the online English lessons in their classroom using their personal tablet PCs in Taiwan. The analysis revealed that the majority of them expressed a positive attitude towards the online lessons compared to their regular face-to-face classes. It was indicated that they found online learning both accessible and conducive to effective teacher-student communication. The findings of this study underscore the potential benefits of online learning. However, what emerged during the data processing was an inappropriate presentation towards a qualitative construct to which the primary pupils responded. It did not accurately reflect what was indicated in the statistical data, which also highlighted areas that need further refinement to optimise online pedagogical strategies, specifically those that foster progress in productive skills among pupils. The data thus challenge research that focuses on teaching and learning of primary EFL pupils as well as treating the linguistic context of this study as another variable.

Data quality in a quantitative survey with 4-7-year-old children: German Good Child Care Act

Presenting Author:Inga Simm, German Youth Institute, Germany; **Co-Author:**Magdalena Molina Ramirez, German Youth Institute, Germany; **Co-Author:**Susanne Kuger, German Youth Institute (DJI), Germany

In early childhood education and care (ECEC), children are recipients as well as actors who actively shape everyday childcare. According to the UN Convention on the Rights of the Child, children have the right to be involved in decisions that affect them. Thus, children's views, opinions and suggestions should be included when planning and implementing matters that affect them. Despite this, children's subjective views have not yet been systematically included in social and educational reporting.

For Germany, the ERiK project is the first to conduct a quantitative representative study to include children's views on child care quality in the monitoring of the Good Child Care Act. ERiK also takes into account the views of other relevant stakeholders in the field (teachers, providers, parents etc.). In the summer of 2022,

a personal survey was conducted with a representative sample of $n=479$ children aged 4 to 7. To this end, a procedure was developed to obtain children's views on ECEC quality in their setting. The survey itself is designed as a board game (a depicted ECEC setting), where playing fields represent survey questions e.g. on the following topics: well-being, use of space, friendships and peers, relationship with professionals, and opportunities for self-determination. In addition, children's parents and teachers were surveyed in order to obtain multi-informant information.

Initial descriptive analyses show a high degree of agreement between the views of children and educational professionals in some cases (e.g. rank order of "who to play with", "what to play" and "where to play" on children's opportunities for self-determination). Initial reliability evaluations show high levels of agreement for the question about friends in ECEC ($r=.5$) and about teacher-child interaction (values between $\tau=.5$ and $\tau=.8$). Results are discussed against the background of methodological limitations that apply in particular to surveys with children.

The ISOTIS study on ECEC children's perspectives regarding inclusion

Presenting Author:Valentina Pagani, Università di Milano Bicocca, Italy

The following contribution presents reflections derived from the international study 'Feel good: Children's view on inclusion'. This study was conducted under the auspices of the EU-funded collaborative project ISOTIS and involved a total of 120 preschool children across six European countries, namely Germany, Greece, Italy, Norway, Poland, and the Netherlands. The study aimed to explore the factors that promote or hinder well-being and inclusion in (pre)school as perceived by young children. Additionally, it sought to elicit suggestions from the children on ways to make school a more welcoming and inclusive environment.

The study adopted a multimethod approach and was designed to actively engage the children involved, allowing them to experience citizenship and agency. However, participatory processes pose inherent challenges that necessitate careful ethical and methodological planning in designing research experiences that not only involve children but are also meaningful for them.

The paper aims to discuss the methodological issues related to accessing children's standpoints, particularly when dealing with sensitive issues such as inclusion. It will also address possible techniques to create a meaningful and engaging research experience for children.

SIG Invited Symposia 6

27 June 2024 09:00 - 10:30

Aula 14

JURE 2024 SIG Invited Symposium

Instructional Design

Navigating Uncertainty? - Implementing Instructional Principles in Ill-Structured Domains

Keywords: Competencies, Conceptual Change, Cooperative / Collaborative Learning, Early Childhood Education, Example-based Learning, Instructional Design, Pre-service Teachers, Problem Solving, Science and STEM, Teaching / Instructional Strategies, Teaching Approaches

Interest group: SIG 06 - Instructional Design

Chairperson: Jasmin Lilian Bauersfeld, TU Dortmund University, Germany

Organiser: Jasmin Lilian Bauersfeld, TU Dortmund University, Germany

Discussant: Ouhaio Chen, University of Leeds, United Kingdom

Instructional principles such as example-based learning (Hoogerheide et al., 2014), problem-solving before instruction (Sinha & Kapur, 2021), formative assessment (Lee et al., 2020), and refutation strategies (Tippett, 2010) are beneficial for learning. Evidence mostly stems from well-structured domains, in which systematic knowledge helps solve well-defined problems with typically clear solution paths (Newell & Simon, 1972). However, it remains mostly unclear how these instructional principles can be implemented in ill-structured domains characterized by multi-faceted problems with multiple solutions (Jonassen, 2000). In these domains, competencies such as problem-solving, analyzing, and conceptual change are necessary to navigate this ambiguity and uncertainty (Hong et al., 2001). While some studies have indicated beneficial effects of instructional principles in ill-structured domains on these competencies (e.g., Ohst et al., 2014; Rourke & Sweller, 2009), other studies reported inconsistent results (e.g., Meier et al., 2022). The first contribution's scoping review addresses that research mostly implements well-structured problems to reduce complexity and aims to show that formative assessment may enhance students' problem-solving competencies in multi-faceted problems. The second contribution examines how problem-solving and instruction have to be combined with video-based analyses to foster student teachers' professional vision of collaborative learning. The results indicated that problem-solving before instruction did not significantly differ from other problem-solving activities. The third contribution investigates how introducing teaching quality concepts and video-based analysis of classroom examples have to be sequenced to foster professional vision in different phases of teacher education. Results show that introducing concepts before video-based analyses fostered student teachers at university, but hampered pre-service teachers in the induction program. The fourth contribution aims to evoke student teachers' conceptual and attitudinal change using refutation texts on educational misconceptions.

Hence, the symposium provides practical approaches and insights on the transferability of findings on instructional principles from well-structured to ill-structured domains.

Fostering preschoolers' competence to solve ill-structured problems through assessment for learning

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

Learning to solve ill-structured problems from an early age is important to prepare children for lifelong learning and for working and living in an ever-changing society. However, most problems presented in research and formal education are well-structured. The current project aims to investigate the feasibility, usability, and effectiveness of assessment for learning to support the development of preschoolers' competencies to solve ill-structured problems. In four studies we try to structure what is inherently unstructured. First, the characteristics and scope of the methods used in scientific studies to measure preschoolers' problem-solving competencies were mapped with a scoping review (study 1). Second, we video-taped twelve 5-year-olds as they attempted to solve three hands-on engineering design problems and. All problem-solving behaviours were identified and categorized according to the PISA problem-solving framework (study 2). The resulting coding scheme provided the basis for the development of an observation form that was used to assess preschoolers' problem-solving competencies in their classroom (study 3). Based on the findings of these studies, we will develop a prototype of an assessment method and have preschool teachers implement it in their practice (study 4). In the scoping review we found evidence that researchers tend to structure problems, delineate the problem space, and take control of the environment. From the observation studies it emerged that preschoolers demonstrate a variety of problem-solving behaviours and strategies and that different problems elicit different behaviours. We conclude that assessing preschoolers' competencies to solve ill-structured problems in their natural environment poses additional challenges for both preschoolers and researchers or teachers compared to assessing competencies to solve well-structured problems in a controlled context. In our final study, we want to find out whether assessment for learning is a feasible, usable, and effective way to help preschoolers develop their competencies in solving ill-structured, fuzzy, real-life problems.

Effects of Problem-Solving Prior to Instruction on Professional Vision of Collaborative Learning

Presenting Author:Özün Keskin, University of Augsburg, Germany; **Co-Author:**Christina Wekerle, University of Augsburg, Germany; **Co-Author:**Lara Tar, University of Augsburg, Germany; **Co-Author:**Ingo Kollar, University of Augsburg, Germany

Collaborative learning has shown significant benefits for students' learning. Yet, effective collaborative learning depends on teachers' ability to scaffold collaboration, requiring professional vision skills. However, pre-service teachers often struggle with correctly assessing and interpreting collaborative learning situations. The Problem-Solving Prior to Instruction (PS-I) approach has proven effective in promoting conceptual learning and knowledge transfer in STEM domains. In contrast, its effectiveness in less structured domains like teacher education remains uncertain. Therefore, the study aimed to explore the impact of PS-I on pre-service teachers' professional vision with $N = 151$ pre-service teachers. After a knowledge pretest, students were either asked to evaluate videos without any further guidance and to compare their solutions for the different videos (PS-PS), received expert solutions of videos followed by students' own evaluations and a comparison of the expert and student evaluation (I-PS), or were first asked to evaluate the videos on their own, then provided with expert

solutions and finally also compared solutions (PS-I). In the posttest, students evaluated two further videos. The results showed no significant difference in professional vision between the conditions, suggesting the need for further investigation of the particular design features that widely vary across PS-I studies.

How to Sequence Concepts and Video-Based Analysis to Develop Future Teachers' Professional Vision?

Presenting Author:Jasmin Lilian Bauersfeld, TU Dortmund University, Germany; **Co-Author:**Patricia Calies, University of Erfurt, Germany; **Co-Author:**Heike Hahn, University of Erfurt, Germany; **Co-Author:**Bernadette Gold, TU Dortmund University, Germany

Professional vision (PV) is a core competency of teaching, that mediates between knowledge and performance in the classroom to implement teaching quality. PV encompasses noticing and reasoning on events of teaching quality (i.e., classroom management and instructional support). Research has shown that introducing teaching quality concepts before or after video-based analyses can both support future teachers in developing PV. Introducing teaching quality concepts before video-based analyses may foster PV by facilitating knowledge acquisition through illustrating concepts with classroom videos as examples (concept-example sequence). Conversely, introducing teaching quality concepts after video-based analyses helps fill examples of classroom videos with teaching quality concepts (example-concept sequence). University student teachers usually lack knowledge and could be supported in acquiring knowledge about teaching quality concepts through the concept-example sequence, thereby developing PV. Pre-service teachers could relate knowledge from university and the induction program to the examples and teaching quality concepts and may benefit from the example-concept sequence. Therefore, we investigated whether introducing teaching quality concepts before (concept-example sequence) or after (example-concept sequence) would be more effective for different phases in teacher education. During two-week video-based seminars $N = 133$ university student teachers and $N = 36$ pre-service teachers in an induction program analyzed teaching quality (classroom management and instructional support) in classroom videos. We manipulated whether they received preparatory texts with teaching quality concepts before (concept-example sequence) or after (example-concept sequence) video-based analyses. Pre-post-tests assessed PV of classroom management and instructional support with a video-based test. Results showed that introducing teaching quality concepts before video-based analysis supported student teachers, whilst hampering pre-service teachers' development of PV of classroom management. Hence, the concept-example sequence had an expertise reversal effect on pre-service teachers. There were no differences between the two phases of teacher education when concepts were introduced after video-based analyses. Implications and limitations will be discussed.

Persuasive Refutation Texts as Instructional Principle – Fostering Conceptual and Attitudinal Change

Presenting Author:Isabell Tucholka, TU Dortmund University, Germany; **Presenting Author:**Madeleine Müller, University of Erfurt, Germany

Student teachers often believe in educational misconceptions that contradict the current state of research. Such misconceptions, acquired during their educational biographies and sometimes deeply rooted, can hinder the learning and integration of further educational knowledge. Refutation texts are an instructional principle for addressing and effectively resolving such misconceptions by explicitly stating the misconception, refuting it and presenting a scientifically accepted explanation. However, as they often contradict personal beliefs, they can potentially lead to identity conflicts and epistemic emotions, obstructing learning. Also attitudes may interfere with the conceptual change intended by refutation text use. A recent study (Thacker et al., 2022) could show that supplementing a refutation text on genetically modified food with a persuasive section in favor of this topic led to significantly greater conceptual change (as well as attitudinal change) than supplementing the text with a persuasive section against the topic. However, the vast majority of studies on refutation texts focusses on socially debated topics (e.g. genetically modified foods) while studies on educational misconceptions are still scarce. Therefore, the current study uses an experimental pretest-posttest design to examine how refutation texts paired with either supporting or non-supporting persuasive information regarding an educational myth (two topics: direct instruction, class size) influence student teachers' conceptual and attitudinal change regarding these educational misconceptions. In addition, we investigate the role of epistemic emotions and perceived identity conflict after reading refutation texts within this context. Data collection will take place in early May so that initial results can be reported at the conference. The results may shed light on which variables need to be considered in the correction of educational misconceptions in order to design effective educational interventions.

Session G 1

27 June 2024 11:00 - 12:30

Aula 1

Single Paper

Teaching and Teacher Education

Pre-service Teacher Education

Keywords: Cooperative / Collaborative Learning, E-learning / Online Learning, Higher Education, Mentoring and Coaching, Pre-service Teachers, Qualitative Methods, Resilience, Self-efficacy, Teacher Professional Development, Video-based Learning

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

Chairperson: Anni silvola, University of Oulu, Finland

Two Learning paradigms with online videos: Impact on preservice preschool teachers' self-efficacy

Keywords: Cooperative / Collaborative Learning, Pre-service Teachers, Self-efficacy, Video-based Learning

Presenting Author:Rongrong XU, The Education University of Hong Kong, Hong Kong; **Co-Author:**Alfredo BAUTISTA, The Education University of Hong Kong, Hong Kong; **Co-Author:**Weipeng YANG, The Education University of Hong Kong, Hong Kong

Previous research has highlighted self-efficacy as a core driving belief that influences teachers' pedagogies and, ultimately, children's learning and achievement. However, scarce research has explored how video-mediated learning activities can be organized to improve the self-efficacy beliefs of pre-service preschool teachers. This study investigated the impact of two learning paradigms mediated by online teaching video cases (OTVCs), namely Individual Learning and Heterogeneous Collaborative Learning (partnerships of in-service teachers, pre-service teachers, and university researchers), on the self-efficacy beliefs of pre-service preschool teachers. Fifty pre-service teachers from one Chinese normal college were randomly assigned to two groups. The study adopted a quasi-experimental intervention design with pre-and post-tests. The results indicated that while both groups achieved improvements in self-efficacy beliefs, participants in the Heterogeneous Collaborative Learning group showed more significant progress. Specifically, pre-service teachers following the Heterogeneous Collaborative Learning mode made greater gains in the efficacy for instructional strategies and the efficacy for child engagement compared to the Individual Learning mode. The findings imply that providing pre-service teachers with opportunities for collaborative video analysis with in-service teachers and university researchers is a more effective way to help them develop a firm sense of self-efficacy. Teacher educators are encouraged to adopt this effective paradigm to accelerate pre-service preschool teachers' professional transition in future preschool teacher education programs.

Teacher Educators' Mentoring Expertise in Supervising Teaching Practicum

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

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

Informed by the perspective of transformative learning theory, this study seeks to explore university-based and school-based teacher educators' mentoring expertise in supervising teaching practicum in Finland. Drawing on qualitative data from two rounds of interviews (semi-structured and Mind Map-stimulated), the study revealed that the Finnish teacher educators' mentoring expertise entailed seven components: 1) goal-oriented thinking for scaffolding instructional support; 2) retrospective mindset for linking theory with teaching practice; 3) questioning strategy for provoking critical thinking; 4) adaptive mentoring interaction based on individualized needs; 5) proactivity and capacity to integrate TCs with professional surroundings; 6) affective bonding for maintaining mutual trust; 7) emotional intelligence for channeling negative feelings. The findings also suggest that teacher educators' mentoring expertise can be reflected in critical experiences that they can learn from to benefit their own teaching or mentoring. The study concludes with practical implications for teacher educators on how to develop and utilize mentoring expertise under a highly autonomous, trust-based, and research-oriented teacher education system. **Keywords:** teaching practicum, mentoring expertise, teacher educator, transformative learning theory

Fostering Resilience: Intervention with Learning Platform for Preservice Teachers

Keywords: E-learning / Online Learning, Higher Education, Pre-service Teachers, Resilience

Presenting Author: Isabelle Kruppenacher, Abteilung für Schul- und Unterrichtsforschung, Institut für Erziehungswissenschaft, Bern, Switzerland; **Co-Author:** Julia Mori, University of Bern, Switzerland; **Co-Author:** Tina Hascher, University of Bern, Institute of Educational Science, Switzerland; **Co-Author:** Irene Guidon, PHBern, Switzerland

The study is part of the "Fostering Resilience in Teacher Education" project, which investigates how preservice teachers' resilience can be fostered during teacher education. The study employs a quasi-experimental design with a sample of $N = 235$ preservice teachers, including $n = 136$ in the experimental group and $n = 99$ in the control group in their third semester at the University of Primary Teacher Education in Bern. The intervention program involves working with a newly developed learning platform based on the BRiTE modules (Mansfield et al., 2016). A mixed method design was adopted to examine the effects of the intervention: (a) Preservice teachers completed self-report measures of resilience and coping strategies before and after the intervention. The survey was analyzed quantitatively. (b) Interviews with 21 preservice teachers to provide a nuanced understanding of their resilience process. Results from quantitative analyses using independent t-tests compared mean scores between the intervention and control groups. The study seeks valuable insights into equipping future teachers with strategies to enhance their resilience, ultimately benefiting teachers and students. The findings aim to inform teacher education programs how resilience promotion can be implemented into curricula to support mental health and success in teaching sustainably. **Keywords:** Resilience, teacher training, intervention, competence development

Session G 2

27 June 2024 11:00 - 12:30

Aula 4

Single Paper

Higher Education, Learning and Special Education, Teaching and Teacher Education

Pre-service Teachers' Attitudes and Beliefs

Keywords: Anxiety and Stress, Attitudes and Beliefs, Computational Thinking, Higher Education, Inclusive Education, Mindsets, Pre-service Teachers

Interest group: SIG 04 - Higher Education, SIG 15 - Special Educational Needs

Chairperson: Yingying HE, University of Helsinki, Finland

Enhancing Pre-Service Teachers' Growth Mindset is Beneficial for Their Low-Achieving Students, too

Keywords: Attitudes and Beliefs, Higher Education, Mindsets, Pre-service Teachers

Presenting Author: Katharina Asbury, Leibniz Institute for Science and Mathematics Education (IPN), Germany; **Co-Author:** Bastian Carstensen, Leibniz Institute for Science and Mathematics Education (IPN), Germany

This study investigates the impact of a 12-week intervention, including a mindset component, on 83 preservice teachers and 173 low-achieving students, aiming to enhance Growth mindset. The intervention targeted Growth Mindset and attribution beliefs by implementing a mindset intervention in pre-service teachers who taught low-achieving students. Pre-service teachers were randomly assigned to three groups: Remedial Lesson (RL), Remedial Lesson + Motivation Intervention (RLM), and Control Group (CG). Results revealed that RLM tutors experienced increased Growth Mindset and decreased attribution on talent compared to the group that did not receive a mindset intervention. Cross-lagged panel analysis demonstrated a reciprocal relationship between tutors' and students' Growth Mindsets in the RLM group, emphasizing the teacher-student dynamic's potential impact on mindset development. In the RL-group, such a link could not be found. This study offers valuable insights into interventions for preservice teachers and low-achieving students, highlighting the interconnectedness of teacher and student mindsets in shaping the learning environment. The findings underscore the significance of mindset interventions in educational contexts, contributing to the ongoing discourse on fostering positive academic attitudes and achievement, especially for struggling students.

A contact intervention in university teacher training: Impacts on beliefs and inclusive instruction?

Keywords: Attitudes and Beliefs, Higher Education, Inclusive Education, Pre-service Teachers

Presenting Author: Mia Hoffmann, Christian Albrechts Universität zu Kiel, Germany; **Co-Author:** Friederike Zimmermann, Kiel University, Germany; **Co-Author:** Sonja Krämer, Christian-Albrechts-University of Kiel, Germany

Teachers' beliefs toward inclusion are fundamental to the success of inclusive education. Based on the interpersonal contact hypothesis (Allport, 1954), this study examined the impact of a contact intervention on student teachers' beliefs regarding the inclusion of students with disabilities and their inclusive teaching practices. Data was collected in a controlled pre-post-follow-up design with control group. The sample consisted of $N = 356$ student teachers ($N = 212$ in the experimental group, $N = 144$ in the control group) who took part in seminars as part of a master's teaching degree program. In the experimental group, a contact intervention was carried out in a seminar session by qualified people with disabilities, whereas the control group followed the usual curriculum. A questionnaire assessed student teachers' attitudes, modern prejudices, self-efficacy and, in a follow-up measurement, their inclusive teaching practices. Consistent with the results of a previous study (Krämer & Zimmermann, 2018), structural equation modeling indicated that the contact intervention had a positive short-term effect on student teachers' attitudes and modern prejudices about the inclusion of students with disabilities. However, there is no evidence for the long-term stability of this effect and the improvement of inclusive teaching. Future research should explore the potential for maintaining this temporary effect in the long term and enhancing inclusive teaching practices.

Do Student Teachers Experience Self-Worth Threats in Computational Thinking?

Keywords: Anxiety and Stress, Attitudes and Beliefs, Computational Thinking, Pre-service Teachers

Presenting Author: Vroni Barkela, University of Kaiserslautern-Landau (RPTU), Germany; **Co-Author:** Areum Han, University of Luxembourg, Luxembourg; **Co-Author:** Anke Maria Weber, University of Luxembourg, Luxembourg

Theory. The successful implementation of computational thinking into primary schools requires that primary school teachers feel safe and confident in teaching this topic to young learners. However, many student teachers face low expectancy of success and heightened anxiety towards computational thinking. Self-worth theory suggests that this may lead to a self-worth threat and in consequence to engagement in self-protective behaviors, hampering the successful acquisition of skills needed to implement computational thinking into their future classrooms. Aims. This study aims to investigate potential self-worth threats as amplifiers of student teachers' resistance to engage in computational thinking. Method. 323 student teachers participated in the study. Participants filled out a questionnaire on expectancy of success and anxiety towards computational thinking, and rated how likely they were to engage in self-protective behaviors, i.e., self-handicapping, avoiding novelty, and academic cheating, when learning about computational thinking at the start of the semester. Results. Students showed heightened levels of anxiety and low levels of expectancy towards computational thinking. Further, they reported that they would be likely to engage in self-protective behaviors. A structural equation model showed that anxiety towards computational thinking was positively related to self-protective behaviors. Moreover, expectancy had a negative indirect effect via anxiety towards computational thinking on self-protective behaviors. Discussion. Student teachers might experience self-worth threats when engaging in computational thinking and engage in self-protective behaviors that might hamper their success. Our findings caution against the impact of possible self-worth threats on teaching methods, thus influencing children's learning in the 21st century.

Session G 3

27 June 2024 11:00 - 12:30

Aula 5

Single Paper

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

Inclusive Education

Keywords: Action Research, Bilingual Education, Cultural Diversity in School, Educational Policy, Inclusive Education, Informal Learning, Learning Approaches, Primary Education, Science and STEM, Teaching / Instructional Strategies

Interest group: SIG 15 - Special Educational Needs, SIG 21 - Learning and Teaching in Culturally Diverse Settings

Chairperson: Sebastian Windisch, Spain

Understanding the Child with Autism Spectrum Disorder as a Learner in the Inclusive Classroom

Keywords: Action Research, Inclusive Education, Learning Approaches, Primary Education

Presenting Author: Julija Grigenaite, Vytautas Magnus University, Lithuania; **Co-Author:** Stefanija Ališauskienė, Vytautas Magnus University, Lithuania

Understanding the Child with Autism Spectrum Disorder as a Learner in the Inclusive Classroom Contemporary education documents underscore the importance of socially equitable and accessible education for all learners, emphasizing active learner empowerment (e.g., Global Education Monitoring Report, 2020; Ministry of Education, Science and Sports of the Republic of Lithuania, 2022). This focus on student voice has given rise to ideas for a personalized learning (PL) approach. Personalized learning begins with a comprehensive understanding of the learner, grounded in Universal Design for Learning principles (Bray & McClaskey, 2015; CAST, 2018). This study concentrates on understanding learners with autism spectrum disorder (ASD) in inclusive primary schools. The research aims to identify personalized approaches to familiarize educators with students with ASD. The research question explores the ways in which teachers and educational support specialists collaborate with and include students with ASD in the learning process. The research employed elements of action research methodology (McNiff, 2016), incorporating case analysis, structured observation, semi-structured individual and group interviews, document analysis, and reflective methods. Participants in the study included primary school teachers and educational support specialists working in inclusive schools, with pedagogical experience in educating pupils with ASD in Lithuania. The number of participants varied from 8 to 17. The findings highlight the close connection between the understanding of the learner and teachers' attitudes and knowledge about ASD. The study reveals that involving the child in designing their learner profile, fostering collaboration with the pupil, and providing opportunities for participation in diverse learning activities, environments, and situations contribute significantly to understanding autistic children as learners.

Implicit Motives in Informal STEM Education: Shaping Equitable Learning Spaces

Keywords: Inclusive Education, Informal Learning, Science and STEM, Teaching / Instructional Strategies

Presenting Author: Jasmin Colakoglu, IPN Kiel, Germany; **Co-Author:** Anneke Steegh, Leibniz University Hannover, Germany; **Co-Author:** Ilka Parchmann, IPN Kiel, Germany

This paper explores the implicit motives of educators in informal STEM education and their impact on designing equitable learning spaces for underserved students. Drawing on the potential of informal STEM education, the paper addresses the accessibility gap in sites such as museums, science centers and science clubs, emphasizing the need for inclusivity (Dawson, 2014). Rooted in Holland et al.'s (1998) concept of figured worlds, the paper underscores the influence of educators' positions on recognizing and valuing individuals in STEM. Informal spaces serve as socially and culturally interpreted realms, deeply influencing students' STEM identity development (Carlone & Johnson, 2007). The paper utilizes two sets of semi-structured interviews (N=7, N=8) to reveal distinct educator motives: STEM-centered, self-centered, and student-centered. Using thematic coding (Braun & Clarke, 2006) and intersectional multi-level analysis (Winker & Degele, 2011), it provides a comprehensive understanding of educators' motives, how they shape learning activity design and impact equitable practices. This paper contributes to the above-mentioned theoretical frameworks, enriching our understanding of inclusive STEM learning spaces by unraveling the interplay of implicit motives in informal STEM education and offering insights into equitable learning spaces. The presentation will provide a concise overview, fostering further discussion on theoretical and practical implications while emphasizing the need for targeted support of educators in creating inclusive spaces.

"Only Amharic or leave quick!": Language education policy in the Western Tigray region of Ethiopia

Keywords: Bilingual Education, Cultural Diversity in School, Educational Policy, Inclusive Education

Presenting Author: Merih Welay, University of Szeged, Hungary; **Co-Author:** Berhane Gerencheal, Aksum University, Ethiopia

Language is a powerful instrument that not only facilitates communication, but also shapes our cultural practices and identities. The right to choose one's language is a fundamental human right that helps preserve one's personal and communal identities. In Ethiopia, a multilingual nation, language goes beyond communication to define administrative borders. Therefore, depriving Ethiopians of their linguistic rights becomes a more complex form of punishment than even food embargoes. This research explores the motives and means by which the Amhara regional state enforced a monolingual and monocultural language education policy in western Tigray through the lens of linguistic genocide. The study involved interviews with ten teachers selected using a snowball sampling method and document analysis to reinforce the outcome. The implementation of the language education policy in western Tigray appears to have been influenced by political and economic factors, along with a desire to promote the assimilation of Tigrayans into Amhara culture and language, a process commonly referred to as 'Amharization.' To achieve their goals, authorities have implemented various measures, such as bans, limitations, penalties, enforcement, compulsory relocation, and even heinous acts, which have resulted in severe physical and psychological distress among the Tigrayan community. The policies, actions, and their outcomes collectively constitute an act of linguistic genocide. This study sheds light on the severe repercussions of such policies, examines their implications, acknowledges the inherent limitations, and offers valuable recommendations for future research in this crucial area.

Session G 4

27 June 2024 11:00 - 12:30

Aula 11

Single Paper

Learning and Instructional Technology, Motivational, Social and Affective Processes

Self-efficacy and Motivation in Mathematics

Keywords: Computer-assisted Learning, Emotion and Affect, Engagement, Feedback, Mathematics / Numeracy, Motivation, Primary Education, Quantitative Methods, Self-efficacy

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

Chairperson: Roosmarijn van Woerden, Utrecht University, Netherlands

Promoting Students' Self-Efficacy through Different Digital Feedback Strategies in Mathematics

Keywords: Computer-assisted Learning, Feedback, Mathematics / Numeracy, Self-efficacy

Presenting Author: Farhad Razeghpour, Ruhr-University Bochum, Germany

Self-efficacy is considered a crucial factor in students' learning processes and is increasingly taken into focus in educational psychology. While the positive impact of feedback on self-efficacy is well known, there is a research gap in the technological feasibility and effectiveness of different feedback strategies in computer-based learning tools. One possible digital tool that enables automatically generated elaborated feedback for mathematical tasks is STACK. In this article we aim to compare the effectiveness of two different feedback strategies that can be realized using STACK. In the first feedback strategy, students receive error- and solution-specific information which they can use to correct their answers. We refer these tasks as compact tasks. During the second feedback strategy, students enter a task loop consisting of sub-steps after an incorrect input. While working through the sub-steps, students receive error-specific feedback. After completing the steps, they can correct their former answers. We call these tasks tutorial tasks. To investigate the effectiveness of these two feedback strategies, we conducted an empirical study with 64 students in a mathematic course at a German university. The students were divided into two groups, where one group worked on tutorial tasks and the other on compact tasks. We evaluated the students' self-efficacy using a questionnaire in which the

students stated on a Likert scale how confident they were to solve certain tasks. In addition, the students' achievement and calibration accuracy were also examined to gain insight of the precision of their judgements. The analysis showed that the students who worked on tutorial tasks had a significantly higher level of self-efficacy, calibration accuracy and achievement than those who worked on compact tasks. The choice of feedback strategy in computer-based learning tools seems to have an influence on the students' learning process and should be further investigated in studies.

The role of mathematical beliefs, utility value, self-efficacy in mathematics engagement

Keywords: Emotion and Affect, Engagement, Mathematics / Numeracy, Self-efficacy

Presenting Author:Achmad Hidayatullah, University of Szeged, Doctoral School of Education, Hungary; **Co-Author:**Csaba Csikos, Institute of education, university of szeged, Hungary

Mathematic engagement has attracted the interest and concern of researchers in mathematics learning. Engagement is associated with students' outcomes. However, empirical studies that explain the way mathematics engagement can be promoted in primary education received little attention to date. This study examined the relationship between mathematical beliefs, utility value, and mathematical engagement among primary education students. As part of mathematics-related belief systems, self-efficacy was examined as a mediator. This study involved 500 participants from five primary schools in Surabaya. Partial least square structural equation modeling (PLS-SEM) was employed for data analysis. This study revealed that mathematical beliefs and utility values directly predicted emotional and behavioral engagement in mathematics learning. Self-efficacy positively mediated the relationship between mathematical beliefs and students' engagement, but not utility value and students' engagement. These findings contributed to providing empirical data about mathematical beliefs and academic engagement and contributed to teaching practices in mathematics learning.

Keywords: mathematical beliefs, utility value, self-efficacy, engagement

A critical ingredient of mathematics learning – Why does motivation matter from early grades?

Keywords: Mathematics / Numeracy, Motivation, Primary Education, Quantitative Methods

Presenting Author:Maarja Sõrmus, University of Tartu, Estonia; **Co-Author:**Jelena Radisic, University of Oslo, Norway; **Co-Author:**Äli Leijen, University of Tartu, Estonia; **Co-Author:**Krista Uibu, University of Tartu, Estonia

Since mathematics is one of the mandatory subjects in school and it creates the basis for STEM subjects taken in older classes, it is vital for students to do well in this subject. However, managing well in the long term requires a motivated learner interested in the subject who values the knowledge gained. Grounded in Expectancy-value theory (EVT), this study analyses 3rd, 4th, and 5th grade Estonia students' motivation to learn mathematics. Based on the results, students report the highest utility value score, which indicates their perception of how learning mathematics fits into their future plans and understanding of mathematics' role in everyday life. Although all motivation dimensions apart from cost decrease, students' intrinsic value drops the most. Due to the importance of intrinsic value in a successful and enjoyable learning process, it is vital to understand what drives such a decline. The correlation between the Expectancy Value Scale (EVS) dimensions and mathematics results shows the highest correlation between perceived competence and math results and higher overall correlations for boys than girls when observing the EVS dimensions. Despite the results indicating the dominance of the utility component in students' perception of valuing math, it is crucial to pay attention to the intrinsic relevance of mathematics. This is a challenge for educational researchers and the educational system to develop more captivating methods for teaching mathematics that enhance students' intrinsic motivation.

Session G 5

27 June 2024 11:00 - 12:30

Aula 13

Single Paper

Instructional Design, Learning and Instructional Technology, Learning and Special Education

Educational Technologies for Teaching

Keywords: Case Studies, Digitalisation, Early Childhood Education, Educational Challenges, Educational Technologies, In-service Teachers, Learning and Developmental Disabilities, Qualitative Methods

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

Chairperson: Mariam Aljabaly, University of Helsinki, Finland

Role of Teacher Ownership in Technology Integration in K-12 Education System.

Keywords: Digitalisation, Educational Challenges, Educational Technologies, Qualitative Methods

Presenting Author:Bikash Chetry, Martin Luther University Halle-Wittenberg, Germany

This research focuses on the critical aspect of teacher ownership in effective technology integration within educational settings. While existing research has provided theoretical models guiding technology use in education, a significant gap remains regarding the role of teacher ownership. Grounded in the Technological Pedagogical Content Knowledge framework, this study explores how teacher ownership influences the successful implementation of technology in classrooms. Teacher ownership, defined as a teacher's personal alignment with an educational initiative, is seen as crucial for achieving meaningful educational reforms and improving student learning outcomes. This study seeks to bridge the existing gap in understanding the dynamics of teacher ownership and its impact on technology integration. The study will be conducted in India, will involve teachers from both private and public schools. Employing semi-structured interviews, the study captures the nuanced experiences and perspectives of educators. The qualitative content analysis method is applied to systematically analyze the data, aiming to identify recurring themes and patterns in teachers' narratives. The findings are anticipated to contribute valuable insights that inform educational practices, policies, and future research especially in the field of education technology.

Tinkering as a Complement to Design in the Context of Technology Integration into Teaching

Keywords: Case Studies, Educational Technologies, In-service Teachers, Qualitative Methods

Presenting Author:Pirjo Mõttus, University of Tartu, Estonia; **Co-Author:**emanuele bardone, Institute of Education, University of Tartu, Estonia, Estonia; **Co-Author:**Maka Eradze, University of Foggia, Italy

The overarching goal of the paper is to contribute to the problematisation of design to understand technology integration in teaching and learning better. Specifically, by problematising design, the paper aims to theorise tinkering with educational technology as a complement to design in the broader generative system underlying technology integration in teaching and learning. Technology integration should be viewed through the complementarity between design and tinkering. Several examples are presented that are drawn from a university course in which in-service teachers were asked to integrate digital technology into their teaching practice and reflect on the process to substantiate the theorisation. The examples provide an empirical illustration of tinkering with educational technology. The theorisation and illustrative examples serve as a case in point to demonstrate how pedagogy and technology are entangled and suggest what takes place during and in between this entanglement. In addition to contributing to theorising tinkering with educational technology and learning design, the paper provides implications for practice, research, and policy related to technology integration in teaching and learning.

Robot-Assisted Intervention for Word Learning in Children with Autism Spectrum Disorder

Keywords: Digitalisation, Early Childhood Education, Educational Technologies, Learning and Developmental Disabilities

Presenting Author:Ana Lucia Urrea Echeverria, Facultad de psicología, Universidad de Sevilla, Spain; **Co-Author:**Isabel R. Rodríguez-Ortiz, Universidad de Sevilla, Spain; **Co-Author:**David Saldaña, Universidad de Sevilla, Spain

Children with autism spectrum disorder may show delays in vocabulary development. Vocabulary delay has been addressed by different technology-based interventions, such as computer-assisted and tablet-assisted interventions. Although the use of robot-assisted interventions has increased, their effectiveness requires further study to be employed as an intervention for word learning in children with autism. Our objective is to explore how social robots and tablets can be used to teach word learning. More specifically: a) to what extent the social robot and the tablet influence word learning, and, regarding the interaction with

technology, do children with autism present more interaction and greater visual attention with the social robot than with the tablet compared to an absence of technology. This study shows the effectiveness of robot-assisted intervention compared to a tablet and the traditional intervention method (e.g., one-on-one instruction). This study concludes with preliminary results, an outline of discoveries, and discussion of adaptations for practical use in robot-assisted intervention.

Session G 6

27 June 2024 11:00 - 12:30

Aula 14

Single Paper

Motivational, Social and Affective Processes

Addressing Emotional Challenges, Anxiety and Stress

Keywords: Anxiety and Stress, Competencies, Digital Literacy and Learning, Emotion and Affect, Higher Education, Learning and Developmental Difficulties, Mathematics / Numeracy, Motivation, Special Education

Interest group: SIG 08 - Motivation and Emotion

Chairperson: Shauny Seynhaeve, Ghent University, Belgium

Diverse Performance: Test Anxiety, Results and Perceived Difficulty

Keywords: Anxiety and Stress, Competencies, Higher Education, Motivation

Presenting Author: Kristóf Lakatos, University of Szeged, Hungary

This study delves into the intricate interplay among test anxiety and perceived difficulty ($N=1446$), and academic performance, particularly in low-stakes scenarios within a higher-performing group ($N=573$). The research question centers on understanding the relationships between test anxiety, test results, and perceived difficulty. The hypotheses include: H1 postulating a correlation between test anxiety and test results; H2 suggesting that test anxiety predicts test results; H3 anticipating superior performance by L2 English learners; and H4 proposing lower test anxiety among L2 English learners. With a participant pool of 1518, divided into three clusters, one showcasing significantly higher test results ($N=573$), the study was conducted at a Hungarian university during a low-stakes situation involving freshmen students. Test results comprised Reading Comprehension and five mandatory competencies, while test anxiety was gauged using the Children Test Anxiety Scale (CTAS) with three subscales. Results indicate the rejection of H1 and H2, acceptance of H3 indicating superior performance by L2 English learners, $z(1445)=3.80, p$

Online Implementation Make a Difference in the Effects of a Mental Health Curriculum at Schools?

Keywords: Anxiety and Stress, Competencies, Digital Literacy and Learning, Emotion and Affect

Presenting Author: Maria Margarida Frade dos Santos, Faculdade de Motricidade Humana - Universidade de Lisboa; ISAMB, FM/UL; CeIED - Centro de Estudos Interdisciplinares de Educação e Desenvolvimento, Universidade Lusófona; Aventura Social Associação, Portugal; **Co-Author:** Celeste Simões, Faculdade de Motricidade Humana, Portugal; **Co-Author:** Anabela Caetano Santos, Aventura Social Associação; Universidade Aberta; ISCTE - Instituto Universitário de Lisboa, Portugal; **Co-Author:** Paula Lebre, Faculdade de Motricidade Humana, Portugal; **Co-Author:** Ilaria Grazzani, University of Milano-Bicocca, Italy

COVID-19 changed and challenged education, with schools obliged to adapt to online settings. This study aims to evaluate the impact of a mental health curriculum implemented at schools, considering the implementation settings: online, onsite, and blended (online and onsite). From kindergarten to high school, 933 students were evaluated by teachers regarding their social and emotional learning, strengths and difficulties, and academic outcomes in two measuring times: pre and post-test. Results revealed a positive impact with both blended and onsite implementation. However, the blended format demonstrated significant positive changes between the pre—and post-test, namely in relationship skills, responsible decision-making, internalized problems, and academic achievement. Implementing social and emotional skills (SES) activities exclusively online seems to positively affect some SES domains more than onsite and blended formats. This study shows that implementing mental health programs at schools, in this case, PROMEHS, is beneficial for students, even amidst the pandemic, and regardless of the implementation settings.

Students' patterns of math anxiety, enjoyment, boredom and performance

Keywords: Emotion and Affect, Learning and Developmental Difficulties, Mathematics / Numeracy, Special Education

Presenting Author: Alina Pavlova, University of Oulu, Finland; **Co-Author:** Johan Korhonen, Åbo Akademi University, Finland; **Co-Author:** Hanna Jarvenoja, University of Oulu, Finland; **Co-Author:** Riikka Mononen, University of Oulu, Finland

The aim of this study was to investigate math emotions and performance profiles in grade 4 students ($N = 321$). Math anxiety was measured using Mathematics Anxiety Rating Scale – Elementary Form (MARS-E), enjoyment and boredom with Achievement Emotions Questionnaire - Elementary School (AEQ-ES), and math performance with FUNA-DB battery (number comparison, digit-dot matching, number series, single digit addition, single digit subtraction). Latent profile analysis was conducted to identify sub-groups of students with different patterns of math anxiety, enjoyment, boredom and performance. Four profiles were identified: two groups that are low performing but differ in emotions (high negative affect in one group [$N = 64, 20\%$] and high positive [$N = 54, 17\%$] in another); high performing with high positive affect [$N = 69, 21\%$]; and, finally, a group that is average on both emotions and performance [$N = 134, 42\%$]. In line with previous research, these findings suggest that students show individual differences already in the early years of schooling, and studying these heterogeneous patterns is crucial to provide personalized support. This study is a part of the longitudinal project tracing developmental patterns of emotions and math performance from Grade 4 to Grade 5 and linking profile membership with differences in well-being.

Session G 7

27 June 2024 11:00 - 12:30

Aula Máster 1

Single Paper

Assessment and Evaluation, Higher Education, Motivational, Social and Affective Processes

Motivation and Metacognition

Keywords: Achievement, Assessment Methods, Experimental Studies, Goal Orientations, Higher Education, Mindsets, Motivation, Psychology, Qualitative Methods, Self-regulated Learning and Behaviour

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

Chairperson: Felipe Sanchez, Lancaster University, Chile

Growth Mindset about Learning, and Ninth-Grade Students' Academic Performance

Keywords: Achievement, Mindsets, Motivation, Psychology

Presenting Author: Jenni Laurell, University of Helsinki, Finland; **Co-Author:** Kirsi ja Tirri, University of Helsinki, Finland; **Co-Author:** Kai Hakkarainen, University of Helsinki, Finland

Compelling evidence shows that a growth mindset about intelligence positively influences academic achievement and motivation at school. Less is known about students' perceptions of giftedness and creativity, which are also relevant to learning. The current cross-sectional study examined the growth mindset of ninth-grade students ($N = 1094$) in the domains of intelligence, giftedness, and creativity. Additionally, the study inspected how these three domains relate to adolescents' educational outcomes across multiple subjects. This study revealed that students' perceptions of intelligence, giftedness, and creativity are similar

yet distinct. On average, students exhibited a growth mindset more prevalent in the domains of intelligence and creativity than in giftedness. A tendency for a growth mindset is more common among girls than boys across all three domains. Furthermore, a significant correlation was revealed between a growth mindset about intelligence and elevated performance in STEM subjects. A growth mindset about giftedness correlated with elevated performance in artistic and practical subjects. However, a growth mindset about creativity did not significantly predict educational outcomes. These results confirmed the domain-specific and gender-related nature of mindsets, indicating that the influence of a growth mindset on academic performance varies across different domains.

Testing the Effectiveness of an Individualized Assignment of Motivational Interventions

Keywords: Assessment Methods, Experimental Studies, Higher Education, Motivation

Presenting Author: Liene Brandhuber, Karlsruhe University of Education, Germany; **Co-Author:** Lisa Bäuлке, Hector Research Institute of Education Sciences and Psychology, Germany; **Co-Author:** Daniel Wiczorek, Eberhard Karls Universität Tübingen, Germany; **Co-Author:** Thorben Jansen, IPN – Leibniz Institute for Science and Mathematics Education, Germany; **Co-Author:** Benjamin Nagengast, Eberhard Karls Universität Tübingen, Germany; **Co-Author:** Cora Parrisius, Karlsruhe University of Education, Germany

In the present study, we tested the effectiveness of an individualized (i.e., needs-matching) assignment of motivational interventions in fostering students' achievement motivation. Students received one out of five motivational interventions (i.e., growth mindset intervention, attributional retraining, social belonging intervention, achievement goal intervention, or utility-value intervention) either based on their individual need for one specific intervention or based on random assignment to one of the other four interventions not matching their need. Following a pretest-posttest-design, we collected data from N = 149 German undergraduate students. The results of multiple regression analyses indicated that students who received a needs-matching growth mindset intervention reported significantly higher growth mindset at posttest than students who did not receive a needs-matching growth mindset intervention. For three out of five interventions (i.e., growth-mindset intervention, attributional retraining, and utility-value intervention) we observed a statistically significant difference between the group of students who received a needs-matching intervention and the group of students who did not receive and did not need the respective intervention (according to their pretest scores). Our findings suggest the potential of the individualized, needs-matching assignment of motivational interventions. A replication study is planned to probe into these promising findings.

A conceptual analysis of goal setting and goal orientation: systematic literature review

Keywords: Goal Orientations, Higher Education, Qualitative Methods, Self-regulated Learning and Behaviour

Presenting Author: Kõue Heintalu, University of Tartu, Estonia; **Co-Author:** Katrin Saks, University of Tartu, Estonia

Abstract According to Locke and Latham's goal-setting theory, goal setting involves establishing specific objectives or targets that an individual or a group aims to achieve. The theory states that setting clear, challenging goals can significantly enhance motivation, performance, and task completion. Goal setting, as described, is the criteria an individual sets for themselves, as for goal orientation, it refers to an individual's underlying beliefs and attitudes regarding goal setting, achievement, and learning. Within the extensive literature dedicated to these subjects, a lot of diverse methods, tools, and intervention activities have been developed to measure and support goal setting and goal orientation. This systematic review aimed to comprehensively examine and describe the conceptual distinctions, measurement methods, and effective development interventions related to goal setting and goal orientation within the higher education learning context. A search was conducted to achieve those aims, and 1,507 articles were retrieved from the EBSCO database which were evaluated eligible or ineligible, based on the titles, abstracts, texts, and specific exclusion criteria. Preliminary findings suggest that goal setting and goal orientation concepts have been mostly used in theories like self-regulated learning theory, achievement goal theory, self-directed learning theory, goal setting theory, and SMART goals theory. The most used tools are questionnaires and the most used interventions are training activities like lectures, which include self-reflection.

Workshops IV 1

27 June 2024 14:00 - 15:30

Aula 13

JURE 2024 Workshop

Combating Social Injustice with Psychological Interventions

Keywords: Motivation, Psychology, Social and Educational Injustice, Social Aspects of Learning and Teaching

Interest group:

Our societies fail to ensure equality and equity for all. As a result, many people, through no fault of their own, are systemically disadvantaged. Although these problems are often structural in nature—an injustice that must be rectified—how can social-psychological intervention methods be harnessed to create positive change by helping people adaptively navigate barriers to their valued goals? This workshop will give attendees evidence-based tools for addressing social injustices in their research. We will begin by discussing basic principles of social- psychological interventions, including their design and implementational considerations. Next, attendees will be exposed to various intervention methods (e.g., values affirmation, growth mindset, attributions, norms, etc.), which have been successful in reducing prejudice (e.g., racism, sexism, transphobia, xenophobia, etc.), achievement gaps, health disparities, intergroup conflict, environmental injustice, or increasing social belonging and workplace diversity. Finally, attendees will consider how these methods can be incorporated into their own research and will receive feedback from the instructor and other workshop attendees.

Combating Social Injustice with Psychological Interventions

Presenting Author: Paul O'Keefe, University of Exeter Business School, United Kingdom

Our societies fail to ensure equality and equity for all. As a result, many people, through no fault of their own, are systemically disadvantaged. Although these problems are often structural in nature—an injustice that must be rectified—how can social-psychological intervention methods be harnessed to create positive change by helping people adaptively navigate barriers to their valued goals? This workshop will give attendees evidence-based tools for addressing social injustices in their research. We will begin by discussing basic principles of social- psychological interventions, including their design and implementational considerations. Next, attendees will be exposed to various intervention methods (e.g., values affirmation, growth mindset, attributions, norms, etc.), which have been successful in reducing prejudice (e.g., racism, sexism, transphobia, xenophobia, etc.), achievement gaps, health disparities, intergroup conflict, environmental injustice, or increasing social belonging and workplace diversity. Finally, attendees will consider how these methods can be incorporated into their own research and will receive feedback from the instructor and other workshop attendees.

Workshops IV 2

27 June 2024 14:00 - 15:30

Aula 14

JURE 2024 Workshop

The ethics of Artificial Intelligence in Education

Keywords: Artificial Intelligence, Educational Policy, Educational Technologies, Ethics

Interest group:

This workshop will focus on the ethics of AI in Education. Key ethical dimensions identified in the context of wider AI research, such as data bias, will be introduced and explored along seven stages of AI development pipeline to provide grounded understanding of the risks and decisions that need to be made by designers of AI systems to ensure the technologies they develop are safe for human use. These wider risks and decisions will be then examined in detail in the context of AI applications in different educational contexts. Through in-group discussions and hands-on activities, participants will explore the nature of biases, risks, and questions that designers of AI in Education technologies may have to address to ensure their technologies are ethically sound. The workshop will close with a plenary discussion of the implications of the discussions for the governance of AIED and the role of academic research in informing AIED policy and

practice.

The ethics of Artificial Intelligence in Education

Presenting Author: Káska Porayska-Pomsta, University College London, United Kingdom

This workshop will focus on the ethics of AI in Education. Key ethical dimensions identified in the context of wider AI research, such as data bias, will be introduced and explored along seven stages of AI development pipeline to provide grounded understanding of the risks and decisions that need to be made by designers of AI systems to ensure the technologies they develop are safe for human use. These wider risks and decisions will be then examined in detail in the context of AI applications in different educational contexts. Through in-group discussions and hands-on activities, participants will explore the nature of biases, risks, and questions that designers of AI in Education technologies may have to address to ensure their technologies are ethically sound. The workshop will close with a plenary discussion of the implications of the discussions for the governance of AIED and the role of academic research in informing AIED policy and practice.

Workshops IV 3

27 June 2024 14:00 - 15:30

Aula Máster 1

JURE 2024 Workshop

Structural Equation Modelling: Applications in Educational Research

Keywords: Assessment Methods, Large-scale Assessment, Meta-analysis, Quantitative Methods

Interest group:

Often in educational research, we deal with latent constructs; that is, variables that are not directly measurable (e.g., numerical skills, academic self-concept). The operational definition of these constructs is determined by theory and tested using appropriate statistical methodology, namely Confirmatory Factor Analysis (CFA). In this framework, the observed scores of the variables (e.g., answers to the items of a psychometric scale) are conceptualized as realizations of the variables' true scores, probably measured with error, and construct validation can be implemented. A scale's construct validity is defined as the degree to which the set of items consisting of the scale measures the theoretical construct they were designed to measure.

In the second part (day 2), I discuss Structural Equation Modeling (SEM) techniques, which "extend" a measurement model by adding structural paths between the latent constructs and assessing the presence of potential causal relationships. Examples of research questions that can be answered using SEM are: "Does mathematics achievement predict mathematics self-concept?", "Do teacher expectations mediate the relationship between mathematics achievement and mathematics self-concept?", "Does gender moderate the relationship between mathematics achievement and mathematics self-concept?".

Hopefully, at the end of both sessions, we will have some time to experiment hands-on with the approach using real data from large-scale assessments in education

Structural Equation Modelling: Applications in Educational Research

Presenting Author: Ioulia Televantou, European University Cyprus, Cyprus

Often in educational research, we deal with latent constructs; that is, variables that are not directly measurable (e.g., numerical skills, academic self-concept). The operational definition of these constructs is determined by theory and tested using appropriate statistical methodology, namely Confirmatory Factor Analysis (CFA). In this framework, the observed scores of the variables (e.g., answers to the items of a psychometric scale) are conceptualized as realizations of the variables' true scores, probably measured with error, and construct validation can be implemented. A scale's construct validity is defined as the degree to which the set of items consisting of the scale measures the theoretical construct they were designed to measure.

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Workshops IV 4

27 June 2024 14:00 - 15:30

Aula Máster 2

JURE 2024 Workshop

Using International Large Scale Assessment Data for Research

Keywords: Digitalisation, Large-scale Assessment, Meta-analysis, Quantitative Methods

Interest group:

This workshop will give an introduction to the specifics of using international Large Scale Assessment (LSA) data for secondary analysis. We will cover the basics of using Plausible Values (PVs) for competence estimation at the population level, and the use of weights and replicate weights to produce accurate standard errors of sample statistics in the face of the complex sampling designs. Using OECD PISA data as an example, we will exercise estimating simple descriptive population statistics, as well as regression and/or path-analytic models. Exercises will be hands-on using the R environment with the packages `lavaan`, `lavaan.survey`, `survey`, and `BIFIE.survey`. So we can use the full workshop time for hands-on exercises, participants will be invited for two up-to 90-minute preparatory sessions via ZOOM and be briefed as to prior reading and required software and packages.

Using International Large Scale Assessment Data for Research

Presenting Author: Johannes Naumann, University of Wuppertal, Institute for Educational Research, Germany

This workshop will give an introduction to the specifics of using international Large Scale Assessment (LSA) data for secondary analysis. We will cover the basics of using Plausible Values (PVs) for competence estimation at the population level, and the use of weights and replicate weights to produce accurate standard errors of sample statistics in the face of the complex sampling designs. Using OECD PISA data as an example, we will exercise estimating simple descriptive population statistics, as well as regression and/or path-analytic models. Exercises will be hands-on using the R environment with the packages `lavaan`, `lavaan.survey`, `survey`, and `BIFIE.survey`. So we can use the full workshop time for hands-on exercises, participants will be invited for two up-to 90-minute preparatory sessions via ZOOM and be briefed as to prior reading and required software and packages.

Session H 1

27 June 2024 16:00 - 17:30

Aula 1

Single Paper

Higher Education, Teaching and Teacher Education

Transitions to the Workplace and Professional Growth

Keywords: At-risk Students, Attitudes and Beliefs, Creativity / Divergent Thinking, Developmental Processes, Doctoral Education, Educational Challenges, Higher Education, Learning Strategies, Primary Education, Problem Solving, Psychology, Qualitative Methods

Interest group: SIG 04 - Higher Education, SIG 11 - Teaching and Teacher Education, SIG 24 - Researcher Education and Careers

Chairperson: Suzanne May Shwen Lee, The University of Hong Kong, Hong Kong

PhDs building careers beyond academia in Finland: the role of work-environment fit in career changes

Keywords: Doctoral Education, Learning Strategies, Problem Solving, Qualitative Methods

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

The careers of PhD graduates have been in transition during the past decades. Currently more than half of the new PhD graduates will be employed outside the academy across the globe, Finland included. The PhD employment in terms of working sectors and job descriptions is shown to vary, increasing need for PhD career guidance beyond the academia. Yet, understanding regarding PhDs' career building strategies is lacking. This study aims to bridge the gap in the literature on doctoral careers by exploring PhD holders' perceptions of the work-environment fit and career building strategies, who work beyond academia. The data comprising 21 semi-structured interviews of PhD holders working outside academia were qualitatively content analysed. Preliminary results suggest that change of job was often related to perceived work environment misfit, and job crafting strategies included for example actively changing work tasks and looking for more interesting goals. The results of this study contribute to research-based understanding on PhD careers outside academia to be used in developing better fitted career support for the PhD candidates in doctoral education.

Commitment issues? Former novice teachers as emerging adults exploring the job market

Keywords: Educational Challenges, Primary Education, Psychology, Qualitative Methods

Presenting Author: Teresa Vicianová, Masaryk University, Czech Republic

Teacher turnover has been widely recognized as a global problem and a leading cause of teacher shortages. Over the years, research on teacher turnover has become an established research field with many substantial findings, one of them being that novice teachers are most at risk when it comes to voluntary turnover. As a reaction to this finding, many strategies have been employed to reduce novice teacher turnover, including various induction and retention programmes. However, these measures are showing mixed results. In an attempt to explore possible underlying causes, this submission looks at the turnover phenomenon from a different perspective. The submission adopts a qualitative approach with the support of emerging adulthood theory proposed by Arnett in 2000. In line with this theory, former young novice teachers are conceptualized as emerging adults who explore possibilities of the job market before settling for one profession. Aim of the study is to identify which features of emerging adulthood are present and influential in the process of novice teacher career decision making. Data for this study were drawn from a larger study which retrospectively reconstructed career trajectories of 8 former primary novice teachers from the Czech Republic. The data were obtained mainly through a series of in-depth interviews, and subsequently analyzed by the means of thematic analysis. Multiple important themes have emerged, suggesting that former young teachers want to explore more job opportunities and invest in self development before committing to one profession. Such findings might have implications for theory, but mainly for practice - especially for designing teacher retention measures.

Understanding the labour market: insights from first- and continuing-generation graduates

Keywords: At-risk Students, Attitudes and Beliefs, Higher Education, Qualitative Methods

Presenting Author: Ayla De Schepper, University of Antwerp, Belgium; **Co-Author:** Eva Kyndt, Swinburne University of Technology, Australia; **Co-Author:** Noel Clycq, University of Antwerp, Belgium

This study examines graduates' understanding of the labour market and its association with structural and agentic factors in the transition from higher education to work. Research has shown that besides possessing and exerting different forms of capital, it is foremost important for graduates to be aware and understand which forms and expressions of capital are valued within their working field. By comparing first-generation and continuing-generation graduates, the research recognises the role of background characteristics on outcomes and highlights potential differences in their perceptions of the labour market. Using a sequential mixed methods approach, including a survey for purposive sampling and interviews (n = 35), this study aims to provide insights into graduates' understanding of the value of social, cultural, and identity capital and identify patterns accounting for socio-economic status and career self-management. The results demonstrate that career self-management has a more significant influence on graduates' narratives of the value of social and identity capital compared to their social background. Conversely, when it comes to understanding the value of cultural capital, social background has a greater impact. Further, the findings show that continuing-generation graduates often maintain an advantage in the labour market by displaying a more competitive mindset.

Researchers' Metamorphic Journey: the Role of Scientific Creativity in Professional Identity Growth

Keywords: Creativity / Divergent Thinking, Developmental Processes, Higher Education, Qualitative Methods

Presenting Author: Marius Daugela, Vytautas Magnus University, Lithuania

The development and growth of a researcher's professional identity is a complex and multi-layered process of finding one's voice. The phenomenon of scientific creativity becomes significant for the researcher to reveal his or her authentic work. Scientific creativity is not only focused on gathering facts or data, but also on how the researcher solves problems, generates new questions, and makes meaningful connections between the existing information. The aim of this research paper is to reveal the phenomenon of scientific creativity as a component of the development of a researcher's professional identity. A phenomenological study using a qualitative research design revealed that scientific creativity is closely related to the researcher's practical activity, where the person not only expresses himself or herself but also seeks new and innovative ideas in research. This study reveals how significant it is for the development of a researcher's professional identity to foster the growth of scientific creativity, through which new solutions to problems can be found in an evolving world.

Session H 2

27 June 2024 16:00 - 17:30

Aula 12

Single Paper

Assessment and Evaluation, Motivational, Social and Affective Processes

Motivation and Engagement

Keywords: Achievement, Argumentation, Assessment Methods, Competencies, Cooperative / Collaborative Learning, Emotion and Affect, Engagement, Motivation, Social Interaction

Interest group: SIG 08 - Motivation and Emotion, SIG 10 - Social Interaction in Learning and Instruction

Chairperson: Marina Grgic, Pädagogische Hochschule Bern, Switzerland

A short review on the relationship between motivation and engagement in language learning

Keywords: Achievement, Argumentation, Engagement, Motivation

Presenting Author: May Aung, University of Szeged, Doctoral School of Education, Myanmar

Abstract This paper presents the conceptual view of motivation, types of engagement and their significance in language classrooms. Language learning in early stages is through acquisition whereas adding a new language to cope with globalization usually takes place in classrooms in which motivation and engagement are the two key components. Meltzen & Hamann, (2004) mentioned that motivation is a main factor for successful language learning. However, Ausin (1984) stated that students' cognitive and physical involvement in learning may lead to achievement. According to Fredricks et al., (2004), engagement refers to students' active participation in teaching and learning process. In fact, learners' motivation together with behavioral, cognitive, emotional and agentic involvement is necessary in language learning. Concerning this concept, Dörnyei (2001) described that motivation and engagement are the two basically important constituents for achievement in language learning. This paper intends to provide language educators with the concept of the two constructs, motivation and engagement as well as the latter's significance in language classrooms. **Keywords:** achievement, motivation, engagement

Social and emotional competencies and student engagement in youth: A systematic review

Keywords: Competencies, Emotion and Affect, Engagement, Motivation

Presenting Author:Anabela Caetano Santos, Aventura Social Associação; Universidade Aberta; ISCTE - Instituto Universitário de Lisboa, Portugal; **Co-Author:**Celeste Simões, Departamento de Educação, Ciências Sociais e Humanidades, Faculdade de Motricidade Humana, Universidade de Lisboa; Aventura Social and Instituto de Saúde Ambiental (ISAMB), Faculdade de Medicina, Universidade de Lisboa, Portugal; **Co-Author:**Maria Margarida Frade dos Santos, Faculdade de Motricidade Humana - Universidade de Lisboa; ISAMB, FM/UL; CeIED - Centro de Estudos Interdisciplinares de Educação e Desenvolvimento, Universidade Lusófona; Aventura Social Associação, Portugal; **Co-Author:**Márcia Melo, Laboratório de Pesquisa e Prevenção em Educação e Saúde (LaPPES), Instituto de Psicologia, Universidade de São Paulo, Brazil; **Co-Author:**lara Freitas, Laboratório de Pesquisa e Prevenção em Educação e Saúde (LaPPES), Instituto de Psicologia, Universidade de São Paulo, Brazil; **Co-Author:**Patrícia Arriaga, ISCTE – Instituto Universitário de Lisboa (IUL), CIS-IUL, Portugal

Student engagement (SE) stands out as a key predictor of academic success and completion, while social and emotional competencies (SECs) are widely acknowledged as essential skills for the healthy development of young individuals. This systematic review delves into the connections between SE and SECs in the age group of 10–25 years, adhering to PRISMA guidelines. A comprehensive search across nine databases was conducted to identify peer-reviewed literature spanning from 2004 to 2020. The review encompasses 91 studies, involving 92,879 youth students. Among the dimensions of student engagement, emotional engagement emerges as the most extensively studied, overshadowing the exploration of the multidimensional SE concept. The distribution of studies across the five CASEL domains is uneven, with a noticeable focus on self-management, self-awareness, and relationship skills in conjunction with SE. Across the board, the majority of studies reveal positive associations between SECs and SE, as well as negative associations with disengagement. These findings are similar for middle, high school, and university students from diverse backgrounds, underscoring the recommendation for educational institutions to integrate social and emotional learning programs to enhance SE. In examining age and gender differences related to SE, the consensus among studies is the prevalence of higher SE values among girls and younger students. Also, there is a clear need for studies that use the multidimensional SE concept, including university students and applying cross-cultural analyses. The collective insights emphasize the imperative for educational strategies that holistically address both student engagement and social-emotional development.

Validating Quantitative Engagement Metrics in Speech-to-Text Data on Team Interaction

Keywords: Assessment Methods, Cooperative / Collaborative Learning, Engagement, Social Interaction

Presenting Author:David Otten, University of Twente, Netherlands; **Co-Author:**Pantelis Papadopoulos, University of Twente, Netherlands; **Co-Author:**Maryam Amir Heari, University of Twente, Netherlands; **Co-Author:**Rike Bron, Rijksdienst voor Ondernemend Nederland (RVO), Netherlands; **Co-Author:**Maaik Endedijk, University of Twente, Netherlands

Engagement of all team members is vital in the process of knowledge sharing and the construction of ideas. Engagement thus needs to be analyzed and fostered to make teams more effective and innovative. Timely and real-time feedback on engagement is essential in this process. Previous studies, however, mainly assess engagement by the use of self-reported metrics (e.g. questionnaires) or qualitative analysis. If we want to make a shift towards real-time analysis these measurements are not applicable. We aim to investigate if non-self-reported and quantitative metrics also give a good representation of engagement in speech-to-text data on team interaction. We first explore the basic definitions of three types of engagement: behavioral, cognitive, and emotional, the role they play in teams, and their interrelationships. Subsequently, we investigate which qualitative metrics are already in use. However, many of these metrics are applied in the context of written communication. To validate them we apply them to a speech-to-text dataset on collaborative course design. The Louvain method for community detection shows that metrics cluster as expected by theory. This provides evidence that the metrics are a valid representation of engagement. Subsequently, we perform a PCA for the three types of engagement to identify the metrics that contribute the most to their respective type of engagement. For further validation, we compare these important metrics to explicit wrap-ups in team interaction. Our results show that cognitive and emotional processes are harder to capture than more straightforward behavioral aspects. This is evident in the prevalence of various generic metrics, including social network metrics and sentiment analysis, compared to metrics that are more context and text-specific. We will present theory and several analyses and results. Emphasis will be put on the most important characteristics to assess if a team is engaged, along with some implications for automated detection.

Session H 3

27 June 2024 16:00 - 17:30

Aula 14

Single Paper

Educational Policy and Systems, Teaching and Teacher Education

Teacher Education and Professional Development

Keywords: Communities of Learners and/or Practice, Cooperative / Collaborative Learning, Curriculum Development, Learning Strategies, Mentoring and Coaching, Pre-service Teachers, Reading, Self-regulated Learning and Behaviour, Teacher Efficacy, Teacher Professional Development, Teaching Approaches

Interest group: SIG 11 - Teaching and Teacher Education

Chairperson: Tania Vieites, Universidad Complutense de Madrid, Spain

Interplay of team teaching practices and perceptions on student teachers' professional identity

Keywords: Cooperative / Collaborative Learning, Mentoring and Coaching, Pre-service Teachers, Teaching Approaches

Presenting Author:Loan De Backer, University of Antwerp, Belgium; **Co-Author:**Wouter Schelfhout, University of Antwerp, Belgium; **Co-Author:**Mathea Simons, University of Antwerp, Belgium; **Co-Author:**Ellen Vandervieren, University of Antwerp, Belgium; **Co-Author:**Jose Rivera Espejo, University of Antwerp, Belgium

Team teaching at the workplace holds promise for creating strong professional identities among student teachers in teacher education. The current study explores the mediating influence of both the advantages and disadvantages of team teaching on crucial components of student teachers' professional identity, specifically those previously identified as significantly impacted by team teaching in empirical research: learning and regulation activities, reflective thinking, and motivation. A cohort of 464 student teachers was randomly assigned to one of three student teaching formats: team teaching (A1 intervention), team teaching with support (A2 intervention), and traditional teaching (Control intervention). Results of Bayesian structural equation modeling show that the advantages of team teaching demonstrated a mediating influence on motivation for the scale introjected regulation. Similarly, the disadvantages of team teaching exhibited a mediating influence on learning and regulation activities for the scale proactive and broad use of the mentor, as well as reflective thinking for the scale reflection. This finding highlights the intricate interplay between team teaching practices and perceptions in the creation of student teachers' professional identity.

Examining Finnish Teachers' Professional Agency in the Professional Community in Curriculum Reform

Keywords: Communities of Learners and/or Practice, Curriculum Development, Teacher Efficacy, Teacher Professional Development

Presenting Author:Martti Laivuori, University of Helsinki, Finland; **Co-Author:**Auli Toom, University of Helsinki, Finland; **Co-Author:**Lotta Tikkanen, University of Helsinki, Finland; **Co-Author:**Kirsi Pyhältö, University of Helsinki, Finland

Reforming curriculum is potentially a powerful tool for school development. Harnessing this potential requires teacher engagement with colleagues for active teacher learning i.e., teachers' professional agency. However, promoting teachers' ownership and active involvement in curriculum making provides a challenge for all levels of policy interpretation. Furthermore, differences in how teachers perceive a curriculum reform and its impact and their agency within the reform are likely to occur. Yet, we still know little about these differences. We address this gap identified in prior literature by examining the individual variation and relationships within and between teachers' sense of professional agency, perceptions of the large-scale curriculum reform impact and perceptions of overall success of the reform on a national level in the Finnish context. This study examined the variation of Finnish teachers' (N=1531) professional agency in the

professional community and its relation to curriculum reform impact and perceived overall success of the reform. Relationships between variables were examined using t-tests and ANOVAs, and latent profile analysis was used to identify professional agency profiles. The results showed that perceptions of reform impact, reform overall success and professional agency varied according to gender, school size, school type, and teaching experience. Four profiles were identified: High sense of professional agency, Reduced collective efficacy, Active help seekers, and Commitment to mutual agreement. High perceived school impact and overall reform success were linked to strong professional agency. The findings imply that development work in the context of curriculum reform can be facilitated by agentic learning in the professional community.

A Professional Development Program for Enhancing Teaching in Self-Regulated Learning.

Keywords: Learning Strategies, Reading, Self-regulated Learning and Behaviour, Teacher Professional Development

Presenting Author:Valentina Ronqui, Universidad Católica del Uruguay, Uruguay; **Co-Author:**Daniel Trías, Universidad Católica del Uruguay, Uruguay; **Co-Author:**Juan Antonio Huertas, Universidad Autonoma de Madrid, Spain

Research has shown that the ability to self-regulate learning requires explicit instruction; therefore, teachers play a fundamental role in this matter. However, the teaching of self-regulation in classrooms is scarce, and most interventions in this context involve teachers implementing activities designed by researchers. There arises a need to create instances of professional development that contribute to promoting changes in beliefs, knowledge, and practices that can be sustainable. In this study, a professional development program was implemented to articulate the teaching of self-regulation strategies through the collaborative coaching methodology. The study spanned an entire academic year and involved four teachers from the final year of primary education. The program included theoretical elements, examples of teaching strategies, and the analysis of student videos. Teachers designed and implemented the teaching of strategies in the classroom. The program's impacts on teachers' self-reported beliefs, knowledge, and practices were evaluated. Additionally, the effects on students' text comprehension, self-efficacy, and self-regulation were assessed at three moments throughout the school year for a total of 70 students. Findings revealed that teachers designed activities and resources, incorporated theoretical aspects, and adopted beliefs consistent with the teaching of self-regulation. They also perceived changes in their work methods and in their students, although they acknowledged a lack of time to translate their new knowledge into practice. Regarding the effects on students, improvements in text comprehension were observed among lower-performing students, and some effects on self-regulation were identified. The study discusses the characteristics of the program that may have facilitated changes in teachers and explores the relationships between the results, implications for practice, and possibilities for future research.

Session H 4

27 June 2024 16:00 - 17:30

Aula Máster 1

Single Paper

Motivational, Social and Affective Processes, Teaching and Teacher Education

In-service Teaching Approaches

Keywords: Curriculum Development, Educational Challenges, In-service Teachers, Primary Education, Qualitative Methods, Quantitative Methods, Science and STEM, Self-concept, Social Aspects of Learning and Teaching, Social Interaction, Teaching / Instructional Strategies

Interest group: SIG 11 - Teaching and Teacher Education

Chairperson: Georgios Mitsostergios, Technical University Munich, Germany

Nurturing the maker mindset within small teams of students in formal education

Keywords: Primary Education, Qualitative Methods, Science and STEM, Teaching / Instructional Strategies

Presenting Author:Mariam Aljabaly, University of Helsinki, Finland; **Co-Author:**Pirita Seitamaa-Hakkarainen, University of Helsinki, Finland; **Co-Author:**Tiina Korhonen, University of Helsinki, Finland; **Co-Author:**Kaiju Kangas, University of Helsinki, Finland

Maker education encompasses multiple pillars; such as Do-it-yourself culture, makerspaces, maker identity and teachers implementing maker-centred activities. This article focuses on teachers in maker education and specifically on how they are nurturing the maker mindset within their students during a maker project. The current research is a qualitative study. The data set includes video recordings of ten craft sessions (40-45 hrs.) implemented by two teachers in a Finnish primary school in southern Finland. The data was analyzed based on Making-Process-Rug (MPR) video analysis method for identifying teachers' verbal and embodied facilitation actions within a frame of 3-minute segments. Preliminary findings revealed that teachers fostered resilience/growth mindset, willingness to tinker, creativity, and collaboration orientation constructs throughout the sessions on various occasions with different verbal and embedded facilitation actions such as spark, sustain, digital demonstrations and supporting reflection, guiding for documentation. Investigating empirically how the teachers foster the maker mindset within their students while implementing maker projects in an authentic context would familiarize the teachers with the actions that need to be highlighted more in future implementations of maker projects. In addition, this study will provide valuable insights and contribute to the existing literature on maker education and help in concretizing the abstract concept of maker mindset.

Challenges teachers face when introducing the learning-centred Altered Flipped Classroom Pedagogy

Keywords: Curriculum Development, Educational Challenges, In-service Teachers, Teaching / Instructional Strategies

Presenting Author:Lizélle Pretorius, Cape Peninsula University of Technology, South Africa

Curriculum coverage at the expense of quality deep learning experiences has been identified as a main concern among teachers within the South African context. This is concerning as an overemphasis on content often result in the continuation of rote-learning practices that reinforce the passive learning phenomenon. The aim of this paper is to highlight certain challenges that in-service high school teachers experience when introducing a learning-centred intervention whilst adhering to the National Curriculum Policy requirements. The 'Altered Flipped Classroom Pedagogy', a context specific intervention, was developed to introduce active learning pedagogy within a content laden curriculum. Bergman and Sam's Flipped Classroom was adapted as it is well renowned and grounded in educational theories that resonate with active learning research. In-service teachers implemented the AFCP after attending an online training session. A training manual that included an overview of the theoretical foundations of the intervention, specific guidelines, practical examples and activities which could be adapted to meet teachers' contextual and subject specific needs, was provided to ease implementation. Four methods of data collection were used, including research diaries, semi-structured online interviews, a spontaneous response and feedback questionnaires. The qualitative data was analysed using thematic analysis with the assistance of ATLAS.ti. The primary findings include four challenges that were divided into two categories i.e., (i) internal and (ii) external point of origin. Role transitioning, uncertainty and the higher demand of creative input that is required when designing learning-centred activities were identified as internal challenges, whereas learners' resistance was perceived as an external challenge. An in-depth understanding of these challenges may provide greater clarity on why teachers often maintain the status quo of traditional rote-teaching practices even though a context specific alternative has been provided. It may also assist with developing strategies that readily support teachers who are meandering towards more learning-centred pedagogies.

The student-teacher relationship: effects of different teachers over time and academic self-concept

Keywords: Quantitative Methods, Self-concept, Social Aspects of Learning and Teaching, Social Interaction

Presenting Author:Mirna Sumatic, University of Oxford, United Kingdom

The importance of a positive and warm student-teacher relationship for children's social and academic outcomes is well-established, and the adverse effects of negative and conflictual relationships equally so. Therefore, modeling the longitudinal trajectories of both closeness and conflict is particularly important in order to enhance understanding of the temporal development of the student-teacher relationship, simultaneously it is also important to model the inevitable changes in teachers across time. Furthermore, academic self-concept is vital for students' achievement, and it is proposed that as children grow older, their attachment conceptualisations become domain-specific, linking academic self-concept to a positive student-teacher relationship. This paper aimed to investigate the mean-level changes in closeness and conflict over time, model the changes in teachers over time, and assess the effects of academic self-concept on closeness and conflict. Using a longitudinal dataset from Finland, data from 520 children from grade 4 to 9 were analysed. At each of the four timepoints teachers completed

the Student-Teacher Relationship Scale – Short Form and children completed an academic self-concept scale measuring self-concept in reading, writing and maths. A series of cross-classified multilevel models for change were specified to account for the hierarchical structure and nesting of the data. The results indicated that closeness decreased over time, while no significant change in conflict was found. Over a third of the variance in closeness and conflict was attributed to differences between teachers over time. And writing self-concept was associated with closeness, while no associations were found between self-concept and conflict. The results provide novel insights into the intricacies of the student-teacher relationship.

Session H 5

27 June 2024 16:00 - 17:30

Aula 5

Poster Presentation

Higher Education

Pedagogical Innovations in Higher Education

Keywords: Competencies, Creativity / Divergent Thinking, Curriculum Development, E-learning / Online Learning, Educational Policy, Higher Education, Mixed-method Research, Problem-based Learning, Quantitative Methods, Social and Educational Injustice, Teaching / Instructional Strategies, Teaching Approaches

Interest group: SIG 04 - Higher Education

Chairperson: Jenni Laurell, University of Helsinki, Finland

Underlying pedagogical principles for generic skill development: A systematic literature review

Keywords: Competencies, Curriculum Development, Higher Education, Teaching Approaches

Presenting Author:Ainsley Loudoun, Maastricht University, Netherlands; **Co-Author:**Laurie Delnoij, Maastricht University SBE, Ts 53, Netherlands; **Co-Author:**Inken Gast, Maastricht University, Netherlands; **Co-Author:**Nicole Kornet, Maastricht University, Netherlands; **Co-Author:**Sjoerd Claessens, Maastricht University, Netherlands; **Co-Author:**Simon Beausaert, Maastricht University, Netherlands

In the evolving post-graduate landscape, characterised by mobile careers and changing societal demands, students face challenges as they transition from the stable higher education environment to dynamic professional contexts. This shift has prompted higher education institutions to pivot their focus from job-specific skills to cultivating a broader set of transferable professional competences. However, despite well-intentioned efforts, these initiatives often yield mixed results. Given the myriad of skill-development methods being employed (e.g., mentoring, portfolios, problem-based learning) across diverse educational domains, those underlying effective mechanisms become ambiguous. As such, this study aims to address this uncertainty by providing a comprehensive overview of effective skill development practices and their contextual conditions, addressing the research question: What pedagogical principles underlie effective generic skill development in higher education? Specifically, this review aims to bridge the recognised gap by conducting a systematic review of existing empirical studies, categorising pedagogical interventions based on their characteristics, related to content, duration, format, and level. By delving into this complexity, this study not only seeks to contribute to the theoretical understanding of effective skill development, but also to provide valuable insights for the practical implementation of evidence-informed frameworks in educational settings.

Students' learning gains from participating in challenge-based learning

Keywords: Creativity / Divergent Thinking, Curriculum Development, Higher Education, Problem-based Learning

Presenting Author:Cassandra Tho, Wageningen University & Research, Netherlands; **Co-Author:**Yvette Baggen, Wageningen University & Research, Netherlands; **Co-Author:**Despoina Georgiou, Utrecht University, Netherlands; **Co-Author:**Heleen Pennings, University Medical Center Utrecht, Netherlands; **Co-Author:**Antoine van den Beemt, Eindhoven University of Technology, Netherlands

In the quest for preparing future professionals to tackle pressing global challenges, many higher education institutions in the Netherlands are implementing challenge-based learning (CBL) as a way to equip and empower students with the essential skills and competencies needed to address grand societal challenges (GSCs). CBL, a relatively new, student-centred educational concept, requires students to work collaboratively in multidisciplinary teams, with external (societal) stakeholders, to propose solutions to real-life challenges. This study examines students' CBL learning experiences (learning activities, moments of uncertainty, failure etc) and the resulting perceived learning gains. Interviews were conducted with 19 students taking part in inter-university CBL challenges within a Dutch alliance of four universities. Initial findings show that students from the same challenges can have different learning gains and that a single learning experience can trigger different types of learning. We will discuss the implications of these findings, for example, how students can be supported in CBL, how the design of CBL can be improved and how the learning gains framework can look like in CBL contexts.

Tracing the Evolution of Widening Participation Discourses: Insights from the Access Corpus

Keywords: Educational Policy, Higher Education, Mixed-method Research, Social and Educational Injustice

Presenting Author:Benjamin Hart, University of Oxford, United Kingdom

Students from socially and economically disadvantaged backgrounds are less likely to enter universities, and certainly elite universities, compared to their more advantaged peers in England. This phenomenon has been described and robustly evidenced by multiple studies over a number of years which have critically examined the unequal access to higher education rates for different sociodemographic groups. Universities have recognised the problem of differential access rates and attempted to address these inequities by providing "Widening Participation" programmes, for example summer schools and mentoring, which have all aimed to encourage students from underrepresented groups to apply. Whilst this is now a very significant area of financial investment for higher education institutions, there is a relative lack of critical reflexivity by institutions concerning the matter of 'taking stock' of the success and achievements of widening participation work. Through creating a novel corpus, the "Access Corpus", comprising the policy output of higher education institutions in England in the form of Access Agreements and Access and Participation plans over the past 15 years, this paper examines widening participation discourses to fill the lacuna that has been created by this lack of reflexivity. The corpus contains ~12 million words and represents documents from 109 English higher education institutions over 15 years (2006-2021). Through machine learning tools (LDA topic modelling) and corpus linguistic techniques, 7 topics are produced which reflect key strands within widening participation discourse; further analysis focusses on two key policy junctures within the timeline of the corpus: a. the 2012 tripling of tuition fees; b. the introduction of the Office for Students in 2018.

Impact of Student Diversity on Learning Behavior and Learning Success in a Flipped Classroom

Keywords: E-learning / Online Learning, Higher Education, Quantitative Methods, Teaching / Instructional Strategies

Presenting Author:Theresa Bauer, Technical University of Munich, Germany; **Co-Author:**Manuel Förster, Technical University of Munich, Germany

Student diversity continues to increase, and traditional learning formats often cannot meet the diverse needs of students in terms of differentiation and individual support, while other teaching approaches such as the Flipped Classroom can provide solutions to this problem. In the Flipped Classroom, a form of Blended Learning, the phases of knowledge transfer and practice are swapped (Strayer, 2012). In this study, two longitudinal surveys were conducted in a large-scale statistics course with 1,503 students. Of these, 759 students attended the statistics course in the traditional format and 744 attended the Flipped Classroom (Förster et al., 2018). This study compares diverse learner characteristics and their effects on learning behavior in the Flipped Classroom with those in traditional courses: (a) How does student demographic, cognitive, and motivational diversity affect individual learning behaviors? (b) How do learning behaviors affect short-term and long-term learning success? (c) How do students' heterogeneous backgrounds impact their learning success? (d) How does course design affect the learning behavior and success of different student groups? The learner characteristics discussed in this article can be categorized into demographic, cognitive, and motivational characteristics (Gaisch, Preymann & Aichinger, 2020). Derived from the Supply-Use-Model (Schrader, 1993), a learning success model was developed that considers the different types of diversity. The path model results show that demographic, cognitive, and motivational diversity have an impact on learning behavior. Moreover, the more frequently students participated in the quizzes and courses, the higher their learning success in the Flipped Classroom.

Session H 6

27 June 2024 16:00 - 17:30

Aula 11

Poster Presentation

Assessment and Evaluation, Higher Education, Learning and Instructional Technology

Learning and Instruction with Artificial Intelligence

Keywords: Artificial Intelligence, Assessment Methods, Attitudes and Beliefs, Creativity / Divergent Thinking, Digitalisation, E-learning / Online Learning, Educational Challenges, Higher Education, L1 / Standard Language Acquisition, Mixed-method Research, Motivation, Philosophy, Secondary Education, Self-efficacy, Survey Research

Interest group: SIG 01 - Assessment and Evaluation, SIG 07 - Technology-Enhanced Learning And Instruction, SIG 08 - Motivation and Emotion, SIG 25 - Educational Theory

Chairperson: Anne-Kathrin Buttchereyt, Bergische Universität Wuppertal, Germany

Generative AI in L1 Education: Unveiling Language Teachers' Perspectives

Keywords: Artificial Intelligence, Attitudes and Beliefs, L1 / Standard Language Acquisition, Survey Research

Presenting Author: Emmy Stevens, Tilburg University, Netherlands; **Co-Author:** Siebe Bluijs, Tilburg University, Netherlands; **Co-Author:** Jimmy van Rijt, Tilburg University, Netherlands; **Co-Author:** Sander Bax, Tilburg University, Netherlands

In the past year and a half, several generative AI (GenAI) were launched and became available for the greater public. GenAI, also known as large language models, suddenly became a topic of conversation in schools, posing great challenges to teachers. Although numerous scientific papers have been published addressing the opportunities and challenges regarding the implementation of GenAI in education, the discussion lacks a more thorough exploration of the possibilities for GenAI in education, and insights from relevant disciplines, such as linguistics and literary theory, are often ignored. By integrating such insights into the discussion on large language models, we can deepen our understanding of the impact of GenAI on teachers and students. The advent of GenAI is particularly relevant to L1 language education, as the acquisition of reading and writing skills holds a prominent position in this field and GenAI will likely transform education in these skills. To ensure that GenAI are more responsibly implemented in L1 education, we need to align theoretical insights with classroom experience. In the present study, therefore, we explore L1 language teachers' perspectives to the usage of GenAI in their teaching of the school subject Dutch Language and Literature in Dutch secondary schools. In a national survey, data are collected via a questionnaire and focus group interviews. By broadening the theoretical discourse on GenAI in education and aligning this with the results from the mixed-method survey research, we aim to provide a comprehensive understanding of the potential impact of GenAI on L1 education. This pivotal information can inform educational policies and practices, guiding teachers and policy makers towards effective and meaningful ways to integrate GenAI into language education.

Inquiry-based learning with GenAI: self-efficacy, motivation, and creativity in secondary students.

Keywords: Artificial Intelligence, Motivation, Secondary Education, Self-efficacy

Presenting Author: Daire Maria Ni Uanachain, Université Nice Sophia Antipolis, Italy; **Co-Author:** Amelia King, Université Nice Sophia Antipolis, China

Secondary level students are often disengaged from learning, lacking in a sense of self-efficacy, and intrinsic motivation. With growing concerns that generative artificial intelligence (GenAI) will lead to over-reliance and cognitive atrophy (Pickens, 2023), thus exacerbating the issue, this research investigates the potential of AI-infused inquiry-based learning to enhance students' self-efficacy and motivation as conceived by Self-Determination Theory. Focusing on the hypothesis that within the framework of a structured inquiry, interaction with GenAI can positively influence students' self-efficacy, and so increase motivation and creativity, the study seeks to answer the question "How does co-authoring with GenAI affect students' self-efficacy and intrinsic motivation, and what is the subsequent impact on creativity?" The methodology employs an adapted version of Sanabria's (Sanabria, 2015) Immersion Method (GIM) to evaluate the influence of GenAI co-authorship on student perceptions of self-efficacy and motivation, using tools like the Creativity Support Index and the Intrinsic Motivation Inventory to assess changes in students' creative and motivational states, providing insights into the effective integration of GenAI in educational practices. The poster will illustrate the results of the research which will continue until the end of the spring semester 2024.

Quality instead of quantity? Consideration of objectivity when evaluating open tasks using ChatGPT

Keywords: Artificial Intelligence, Assessment Methods, Educational Challenges, Mixed-method Research

Presenting Author: Lisa Matuschek, LMU Munich, Germany; **Co-Author:** Susanne Weber, Ludwig-Maximilians-Universität, Germany

Artificial intelligence (AI) is increasingly moving into the educational policy discourse. Previous studies in the field of LSA show that digital evaluation methods can improve objectivity problems in the assessment of open-ended tasks. Further studies show that it is possible to evaluate open-ended tasks using ChatGPT. However, when considering objectivity regarding the behaviour of ChatGPT, it is known that the same instruction (prompt) is repeatedly entered, the same result is not always returned.

The present study aims to investigate the behaviour of ChatGPT in the repeated evaluation of open-ended tasks. For this, 56 exam solutions from a university exam with open-ended tasks of varying degrees of complexity are repeatedly evaluated by ChatGPT. The order of the solutions is changed randomly in several samples, but the prompt given to ChatGPT remains the same. The ratings given by ChatGPT were then compared with the rating of a human expert and with each other.

The initial results show that the evaluation given by ChatGPT varies between a high level of agreement (agreement of approx. 80%) with the evaluation by the expert and a low level of agreement (agreement of approx. 33%).

The evaluation by ChatGPT also shows some major differences in the sample comparison. However, the ratings of the samples tend to be "stricter" (generally fewer points are awarded) or "softer" (generally more points are awarded). Even if the scoring varies across the samples, supposedly good tasks receive more points across the samples than supposedly bad tasks.

The results should provide information on the extent to which ChatGPT can be integrated into educational assessment and should aim to provide guidelines for embedding objective feedback through ChatGPT. However, in order to realise the benefits of ChatGPT in practice, based on the preliminary results, further adjustments to the implementation are required.

Diving into Theory: Fragmentary Thinking as Foundation for Philosophy of Education and AI-Research

Keywords: Artificial Intelligence, Creativity / Divergent Thinking, Higher Education, Philosophy

Presenting Author: Alice Watanabe, University of Hamburg, Germany

Abstract: In my paper I present the fragmentary thinking of the political thinker Hannah Arendt and show how this type of theoretical research can be applied to higher education research in general and to the current topic of artificial intelligence (AI)-supported teaching and learning in tertiary education. The paper is divided into four main parts: The first part begins by showing why theoretical research is currently given less attention in the field of educational research and highlights the relevance of theoretical research, especially on new technologies such as AI. Second, Arendt's reflections on fragmentary thinking are outlined and central characteristics are elaborated. Third, after a definition of fragmentary thinking, three arguments are formulated to explain why fragmentary thinking is an interesting approach for theoretical research in higher education. Finally, these considerations are linked to the use of AI in higher education, and examples are given of how fragmentary thinking can be used to investigate AI-supported teaching and learning. **Keywords:** Theoretical higher education research, fragmentary thinking, Hannah Arendt, AI-supported teaching and learning

Exploring potentials and challenges of integrating AI in education: A literature review

Keywords: Artificial Intelligence, Digitalisation, E-learning / Online Learning, Educational Challenges

Presenting Author: Oldřiška Buchanan, Faculty of Education, Masaryk University, Brno, Czech Republic

This literature review synthesizes current research on the emerging use of artificial intelligence (AI) tools, specifically chatbots like ChatGPT, in education. It

examines literature available on the SCOPUS and Web of Science databases during the month of October 2023 and analyzes numerous applications. The studies within this review span diverse academic domains - illuminating key insights and considerations for integrating AI tools across the educational spectrum. Contexts analyzed range from elementary lesson planning (Hashem et al., 2024) to medical terminology training (Hsu, 2023), university writing courses (Chan & Hu, 2023), scientific literature reviews (Salvagno et al., 2023), computational game design projects (French et al., 2023), and language acquisition programming (Kohnke et al., 2023). Such wide coverage demonstrates ubiquitous opportunities and risks associated with the infiltration of artificial intelligence across virtually all curricula in modern academia. Key potentials like motivation, efficiency, and accessibility are weighed against risks around accuracy, ethics, and de-skilling. While findings recognize promising capabilities, most studies emphasize continued human guidance is essential for genuinely enhancing learning. Critical analysis of methods and biases is provided. The review concludes more evidence is needed but that responsibly integrating AI could augment human teachers and empower students if everyone concerned is aware of current limitations of AI and those are actively addressed.

Session H 7

27 June 2024 16:00 - 17:30

Aula 4

Roundtable

Teaching and Teacher Education

Learning and Professional Development

Keywords: Cooperative / Collaborative Learning, Higher Education, In-service Teachers, Informal Learning, Lifelong Learning, Mixed-method Research, Pre-service Teachers, School Leadership, Self-efficacy, Social Interaction, Synergies Between Learning / Teaching and Research, Teacher Professional Development

Interest group: SIG 14 - Learning and Professional Development

Chairperson: Gemma Erena-Guardia, University of Seville, Spain

Job shadowing program as an effective measure for knowledge acquisition and transfer?

Keywords: Cooperative / Collaborative Learning, Informal Learning, Lifelong Learning, Self-efficacy

Presenting Author:Ascha Ahmed, University of Mannheim, Germany; **Co-Author:**Viola Deutscher, University of Mannheim, Germany

Given the increasing lack of skilled workers caused by the demographic and digital transformation, companies must establish and maintain a culture of lifelong learning to remain competitive. This can be achieved by job shadowing - an on-the-job training methods in which employees build up knowledge and transfer it to their own working environment by observing others. The theoretical basis for this learning activity is the Social Learning Theory of Albert Bandura. The learning process itself can be influenced by a person's self-efficacy – the belief in one's own capabilities to successfully master a task. The aim of our study is to investigate whether shadowing can be an effective measure for knowledge acquisition/transfer in a work environment taking into account self-perceived self-efficacy and its sources. An intensive longitudinal study will be conducted in March to April 2024 with 20 participants part of a 4-week cross-company shadowing program. We anticipate new insights into the effectiveness of on-the-job training methods and hope we can make a valuable contribution to this little-researched area.

Unraveling Teacher Leadership: The impact of social networks on teacher leadership readiness

Keywords: In-service Teachers, Mixed-method Research, School Leadership, Social Interaction

Presenting Author:Emma Van Malderen, Vrije Universiteit Brussel, Belgium; **Co-Author:**Vicky Willegems, Vrije Universiteit Brussel, Belgium; **Co-Author:**Jetske Stribos, Vrije Universiteit Brussel, Belgium

Teacher leaders rely on interactions with colleagues and the collaboration of other school members for successful task completion (Struyve, 2017). More specifically, teacher leaders enhance their influence on school development by expanding connections and relationships through both formal and informal activities (Brosky, 2011). Notably, peer relationships are underscored as one of the five key factors influencing the quality and effectiveness of teacher leaders (Nguyen et al., 2019). Concluding, a strong and dense social network must be in place for teacher leaders to best use their socio-professional relationships to exert influence. Despite these insights on the social dimension of teacher leadership, a robust understanding of the specific elements shaping teacher leadership readiness and the impact of social networks on this readiness remains underexplored. A comprehensive large-scale quantitative investigation is essential to address this gap and provide correlational insights in teacher leadership research (Siddiqui et al., 2021). Therefore, in this study, we aim to comprehensively explore the relationship between social networks and teachers' readiness to become teacher leaders by examining this connection on a broad scale. By analyzing large-scale multilevel survey data using the Teacher Leadership Readiness Instrument and the Teacher Social Capital Scale, we will conduct a correlational study. Recognizing the significance of context and the school team in supporting teacher leaders (Siddiqui et al., 2021; Struyve, 2017; York-Barr & Duke, 2004), the current study hypothesizes that this context and socio-professional relationships within the school team are not only critical for active teacher leaders but also influential in determining teachers' readiness to transition into leadership positions.

Let's talk about educational science with pre-service teachers for general and special education

Keywords: Higher Education, Pre-service Teachers, Synergies Between Learning / Teaching and Research, Teacher Professional Development

Presenting Author:Madeleine Müller, University of Erfurt, Germany

The professional competence of teachers, defined as a combination of professional knowledge and supportive affective-motivational aspects, has been shown to be an important condition for high-quality teaching (König et al., 2012; Kunter et al., 2013; Voss et al., 2022). The initial training phase of pre-service teachers at university is a key learning opportunity for the development of professional evidence-oriented competences. But sometimes unfavorable beliefs can make the acquisition of evidence-oriented professional knowledge more difficult (Fischer, 2021; Thomm et al., 2021a). However, existing studies indicated for pre-service teachers that little value and relevance is attached to educational science findings and the resulting evidence-oriented teaching (Broekkamp & Hout-Wolters, 2007; Merk et al., 2017; Voss, 2022). Lecturers must therefore try to overcome this pedagogical challenge by somehow convincing their pre-service teachers that it is relevant to consult empirical findings and that their subject is scientific (workable) (Richardson & Lacroix, 2020). To find out how educational courses for pre-service teachers can help improve the perception and understanding of educational science as a (useful) science, the aim of the first planned study is to examine in a qualitative way how educational science is conceptualized by pre-service teachers at the beginning of their study. Although pre-service teachers have been investigated, special education has not been explicitly considered in this research. Our study, therefore, aims to go beyond this by contrasting both pre-service teachers for general and special education.

If we better comprehend the pre-service teachers' preliminary perceptions and understanding of educational science, we may be better able to address them by providing information on where to start and how to deal with them productively. That means, that based on the results of the first study, a seminar concept tailored to the conceptualization of the pre-service teachers can be developed in a second planned study.

Keynote III 1

28 June 2024 09:30 - 10:30

Salón de Actos

JURE 2024 Keynote

What does AI in Education research tell us about the role of AI in supporting human learning?

Keywords: Artificial Intelligence, Educational Neuroscience, Science and STEM, Social Aspects of Learning and Teaching

Interest group:

Chairperson: Tryfonas Papadamou, University of Cyprus, Cyprus

Current discourse on Artificial Intelligence in Education (AIED) oscillates between hope and apprehension, painting a future where AI reshapes all aspects of human life. This talk explores AI's role in Education, addressing mixed messages affecting educators, policymakers, and the public. It examines AI's potential for human learning alongside concerns about ethical implications, devaluation of non-STEM subjects, and impacts on neurocognitive and socio-emotional functioning. Drawing on recent research, the talk seeks to clarify what AIED is by showing how it aligns with fundamental learning and teaching principles and explores AIED's implications and actions needed for future educational practices and policies.

What does AI in Education research tell us about the role of AI in supporting human learning?

Presenting Author:Káska Porayska-Pomsta, University College London, United Kingdom

Current discourse on Artificial Intelligence in Education (AIED) oscillates between hope and apprehension, painting a future where AI reshapes all aspects of human life. This talk explores AI's role in Education, addressing mixed messages affecting educators, policymakers, and the public. It examines AI's potential for human learning alongside concerns about ethical implications, devaluation of non-STEM subjects, and impacts on neurocognitive and socio-emotional functioning. Drawing on recent research, the talk seeks to clarify what AIED is by showing how it aligns with fundamental learning and teaching principles and explores AIED's implications and actions needed for future educational practices and policies.

Session I 1

28 June 2024 11:00 - 12:30

Aula 1

Single Paper

Assessment and Evaluation, Instructional Design

Comprehension of Text and Graphics

Keywords: Assessment Methods, Comprehension of Text and Graphics, Digitalisation, Experimental Studies, Instructional Design, Learning Strategies, Mathematics / Numeracy, Meta-analysis, Qualitative Methods, Secondary Education

Interest group: SIG 02 - Comprehension of Text and Graphics

Chairperson: Jakob Schnell, Switzerland

Cognitive accessibility and Childhood: Needs Assessment through Focus Groups

Keywords: Assessment Methods, Comprehension of Text and Graphics, Instructional Design, Qualitative Methods

Presenting Author:Miriam Rivero-Contreras, University of Extremadura, Spain; **Co-Author:**Gema Erena-Guardia, University of Seville, Spain; **Co-Author:**David Saldaña, Universidad de Sevilla, Spain

The purpose of cognitive accessibility is to facilitate understanding of the environment, enabling autonomous participation for individuals regardless of their abilities. While experiences and best practices in cognitive accessibility are available, particularly for children, research in this field is limited, and recent systematic reviews suggest room for methodological improvement. This study aims to assess the needs of children aged 6 to 11 in cognitive accessibility to enhance their comprehension of environments. Eleven children and nine parents participated in four focus groups, addressing issues of orientation and information comprehension. The healthcare context was employed to simulate navigation and comprehension scenarios. Results underscored the significance of providing prior knowledge of the environment, adapting spaces to children's height, utilizing visual cues and mobile devices, distinguishing between adult and child areas, and employing plain language. The discussion emphasizes the necessity of implementing cognitive accessibility measures to enhance children's autonomy in various physical environments. Furthermore, it underscores the importance of evaluating the impact of these measures, ensuring their effectiveness through consultations with children and their support figures, and conducting research with appropriate methodological rigor.

How successful are learners in entering data into stochastic diagrams?

Keywords: Comprehension of Text and Graphics, Experimental Studies, Mathematics / Numeracy, Secondary Education

Presenting Author:Michael Rößner, LMU Munich, Germany; **Co-Author:**Karin Binder, Ludwig-Maximilians-Universität (LMU), Germany

Making sense of statistical data is becoming increasingly important in our society. Therefore, mathematics curricula all over the world are putting the field of stochastics education more into focus. Visualizations (e.g., tree diagrams) play an important role in teaching stochastics and solving probabilistic tasks (e.g., "what is the probability that a person is sick if she/he has received a positive medical test result?"). Especially for so-called Bayesian tasks involving conditional probabilities, research has shown that providing completely filled diagrams can help people to find a correct solution. Presenting the task or diagram with natural frequencies (e.g., "80 out of 100 people") instead of probabilities (e.g., "80%") increases performance in Bayesian tasks as well. However, solving a probabilistic task rarely begins with reading information from a completely filled diagram, but includes other steps, for example, choosing and constructing an appropriate diagram and entering the statistic data. Despite their importance, these steps are usually overlooked in research. Therefore, in the present study, we examined entering statistical information into empty diagrams. N=172 participants entered conditional and joint information (i.e., probabilities or corresponding frequencies) into empty diagrams in a paper-and-pencil-test. We analyzed students' performance and typical errors dependent on the information format (probabilities vs. frequencies) and the type of visualization (2x2 table, double-tree, net diagram). Participants' performance was modeled using a generalized linear mixed model with a logit link function and showed a systematic, significant positive effect for using frequencies instead of probabilities for entering conditional information but not for joint information. Overall, the rather new and unknown frequency net proved to be a helpful visualization. In conclusion, our results show that the choice of information format and visualization type affects participants' performance in entering information into diagrams and suggest that other parts of the solving process should be examined in future research.

Operationalization and Effectiveness of Reading Strategies in Digital Reading – A meta-analysis

Keywords: Comprehension of Text and Graphics, Digitalisation, Learning Strategies, Meta-analysis

Presenting Author:Georgios Mitsostergios, Technical University Munich, Germany; **Co-Author:**Lisa Ziernwald, Technical University of Munich, Centre for International Student Assessment (ZIB), Germany; **Co-Author:**Doris Holzberger, Technical University of Munich (TUM) & ZIB (Centre for International Student Assessment), Germany; **Co-Author:**Carolin Hahnel, Ruhr Universität Bochum, Germany; **Co-Author:**Frank Reinhold, University of Education Freiburg, Germany

The ongoing digitalization of education has made digital reading environments a central feature of 21st-century education. Compared to paper-based reading, where various reading strategies have been empirically proven to assist readers in achieving their learning goals, digital environments bring unique challenges, especially regarding reading comprehension. Thus, reading strategies and how they are operationalized in such environments are vital to promoting reading comprehension and motivation. For this reason, this meta-analysis sought to explore first which reading strategies are used in digital reading environments, second, if the use of strategies has an overall effect on K-12 to tertiary students' reading outcomes (reading comprehension and reading motivation), and third, if this effect is moderated by reading strategy contextual factors or reading strategy embedment features. The meta-analysis conducted found that the use of reading strategies while reading digitally had an effect of $g = 0.35$ ($p < .001$, $k = 99$) on reading comprehension and an effect of $g = 0.20$ ($p = .387$, $k = 22$) on reading motivation. At the same time, moderator analysis showed that some contextual factors influenced the effect on reading comprehension. The potential of reading strategy operationalization to improve digital reading outcomes, in light of the small effect sizes and the moderator effects, is further discussed.

Session I 2

28 June 2024 11:00 - 12:30

Aula 1

Single Paper

Assessment and Evaluation, Culture, Morality, Religion and Education

Cultural Diversity and Inclusion in Schools

Keywords: Citizenship Education, Cultural Diversity in School, Developmental Processes, Inclusive Education, Migrant / Refugee and Minority students, Multicultural Education, Qualitative Methods, Social Interaction

Interest group: SIG 21 - Learning and Teaching in Culturally Diverse Settings

Chairperson: Cassandra Tho, Netherlands

Contributions to the Adaptation of The Ethnic Identity Scale in the Portuguese Context

Keywords: Cultural Diversity in School, Developmental Processes, Migrant / Refugee and Minority students, Multicultural Education

Presenting Author: Mafalda Campos, ISPA - Instituto Universitário | Center for Research in Education, Portugal; **Co-Author:** Francisco Peixoto, ISPA - Instituto Universitário | Center for Research in Education, Portugal

Ethnic-racial identity (ERI) is defined as the way one thinks and feels about their membership to one or multiple ethnic-racial groups and has been shown to be positively associated with well-being and achievement, and to be a protective factor against discrimination. Faced with a lack of investment in the study of ethnic identity and ethnic-racial minorities' school adjustment in European countries, this study aimed to contribute to the adaptation of the Ethnic Identity Scale (EIS) in the Portuguese context. Two hundred (200) students attending Portuguese schools participated in this study by filling out a questionnaire containing a Portuguese version of the EIS. By conducting exploratory and confirmatory factor analysis (EFA and CFA, respectively), a 3-factor solution assessing ERI through exploration, resolution, and affirmation was supported. This solution shows high reliability, with Cronbach's α for each factor varying between .79 and .89, and a good model fit (CFI=.974, TLI=.969, RMSEA=.042). Measurement group invariance was tested among three main groups of students in the sample according to their ethnic identification (Iberian, ROMA, and other ethnic-racial minorities), reaching metric invariance. This paper represents a contribution to the adaptation of the EIS to the European context, by adding one more country to the list of those adapting and assessing the psychometric properties of this instrument. Knowing how students from ethnic-racial minorities feel about themselves and engage within the school context is an essential part of fighting against existing inequalities of social and affective adjustment. We acknowledge the need for further studies with higher sample sizes and with a more diverse sample. Although with its limitations, this study represents a starting point for the understanding of the underlying identity processes of different ERMs in Portugal, and their potential contribution to school positive adjustment. Limitations and reflections for future research are addressed.

Diversity in international Large Scale Assessment– How does discourse on diversity change over time?

Keywords: Cultural Diversity in School, Inclusive Education, Migrant / Refugee and Minority students, Qualitative Methods

Presenting Author: Fatmana Selcik, University Heidelberg, Institute of Educational Science, Germany; **Co-Author:** Nina Jude, University Heidelberg, Institute of Educational Science, Germany

Diversity in schools and classrooms is being given a growing amount of attention in education policy and educational research. Dealing with difference and diversity is one of the key challenges facing schools. Diversity can refer to sociocultural categories of difference such as gender, ethnicity, milieu or disability as well as ability-related differences between students. This paper focuses on the question, how the discourse on diversity has developed over the last 20 years and which meaning this has for dealing with heterogeneity and homogenization within the field of education and international education studies. At least since the first results of the OECDs Program for International Student Assessment (PISA) it has been realized that there is a link between educational inequality, educational success, class, gender and ethnicity, which differs between educational systems. However, how is diversity defined and assessed in these studies and how has the discussion about diversity developed over the last 20 years? The aim of this paper is to examine theoretical and empirical perspectives on diversity, using the example of PISA, between 2000 and 2022 and address following question: How does discourse on diversity change over time? We examine frameworks and reports from PISA using qualitative content analysis to describe what was asked, analysed and which categories of diversity were associated with achievement in particular.

Antecedents and consequences of perceived discrimination: The moderating role of social inclusion

Keywords: Citizenship Education, Cultural Diversity in School, Migrant / Refugee and Minority students, Social Interaction

Presenting Author: Sira Neuhaus, Technical University Dortmund, Germany; **Co-Author:** Alyssa Laureen Grecu, Center for Research on Education and School Development, Germany; **Co-Author:** Sittipan Yotyodying, Technical University Dortmund, Germany; **Co-Author:** Nele McElvany, Technical University Dortmund, Germany

The present study set out to identify predictors (sociodemographic characteristics, feeling of belonging to Germany) for perceived ethnic discrimination among students with an immigrant background. Furthermore, we examined whether perceived discrimination is associated with civic dispositions (political interest, liberal values, and willingness to engage in violent behavior) and how these associations are moderated by social inclusion. We conducted structural equation model analysis with data from German seventh and tenth graders with an immigrant background, operationalized by the country of birth of the students and their parents ($N = 509$, 51% female, $M_{age} = 14.16$, $SD = 1.59$). The results showed higher levels of discrimination for male students, students who speak less German at home, and those who feel less belonging to Germany perceived. In line with our expectations, higher perceived discrimination was associated with lower political interest, lower liberal values, and higher willingness to engage in violent behavior. Contrary to our expectations, a moderation by social inclusion was not confirmed statistically. However, the direction of the interaction terms suggested that social inclusion might buffer the effect of perceived discrimination on adjustment toward liberal values, while the association with willingness to engage in violent behavior could be intensified. Our research underscores the critical role of perceived ethnic discrimination within reducing political interests, reducing liberal values, and increasing willingness to engage in violent behavior, contributing new perspectives to existing research. This study provides valuable insight into an explanation of the complex dynamics of perceived discrimination, especially examining its influence on students' civic dispositions. Understanding political and social issues as well as fostering a commitment to democracy depend on these attitudes and behaviors. It is important to highlight that a long-term connection can have an impact on social participation, democratic coexistence, and the integration of young people with an immigrant background.

Session I 3

28 June 2024 11:00 - 12:30

Aula 13

Single Paper

Higher Education

Doctoral and Researcher Education

Keywords: Doctoral Education, Higher Education, Researcher Education, Social sciences and Humanities, Writing / Literacy

Interest group:

The relationship between L1 and L2 writing proficiency among international doctoral students

Keywords: Doctoral Education, Higher Education, Researcher Education, Writing / Literacy

Presenting Author: Wai Mar Phyo, University of Szeged, Hungary

Writing academic texts in English can be a challenging endeavor for novice writers hailing from non-native English-speaking (NNES) backgrounds with limited experience in English academic writing. When novice writers attempt to produce academic texts in their second language (L2), there seems to be a relationship between their first language writing (L1) and their L2 writing abilities. It is plausible that students transfer lexical, grammatical, and syntactical knowledge from their L1 to their L2 (Cummins, 2008; Alkhateeb, 2018). This study aimed to investigate the relationship between L1 writing and L2 writing among NNES doctoral students. To accomplish this, a survey was designed, adhering to Creswell's (2012) guidelines, and administered during the academic year 2021-2022. A total of 255 NNES doctoral students willingly participated in the survey, providing their self-assessed proficiency levels in L1 writing and L2 writing on a 1-6 Likert scale. According to the descriptive analysis results, the students exhibited relatively high levels of confidence in both L1 and L2 writing abilities, even though

their self-assessed scores for L1 writing ($M=4.67$, $SD=1.33$) were higher than those for L2 writing ($M=4.49$, $SD=1.13$). Moreover, the dataset revealed a positive correlation between self-assessed scores in L1 writing and L2 writing, suggesting that students who perceived themselves as proficient L1 writers tended to rate themselves higher in L2 writing. To explore this further, a one-way ANOVA test was performed, revealing a significant difference between the student groups ($F(5, 249) = 6.508$, $p = .000$). Furthermore, Pearson correlation analysis was conducted to investigate the relationship between L1 and L2 writing. The analysis revealed a statistically significant relationship between the two variables at the p

Academic Language Socialization Experiences of International Doctoral Students

Keywords: Doctoral Education, Higher Education, Researcher Education, Social sciences and Humanities

Presenting Author: Wai Mar Phyo, University of Szeged, Hungary

Writing research papers in an academically concise manner is a crucial skill for research students, who bear responsibility for all claims made in their texts. Achieving clarity and precision is essential to meet academic standards (Ciampa & Wolfe, 2019; Hyland, 2016). It requires a deep understanding of discipline-specific terminology, syntactic structures, and rhetorical strategies. Consequently, novice writers from non-native English-speaking backgrounds often struggle to meet linguistic and disciplinary expectations in academic writing, hindering their ability to disseminate research and fulfill publication requirements (Campbell, 2022; Paltridge & Starfield, 2023). Grounded in language socialization theory (Duff, 2007, 2010), this research explores how emerging scholars assimilate into their academic communities. Semi-structured interviews were conducted with eighteen doctoral students representing diverse linguistic backgrounds such as Portuguese, Bahasa, Azerbaijani, Malayalam, Russian, Kusaal, Burmese, Yemeni Arabic, Turkish, Vietnamese, Lao, Bangla, Kazakh, Amazigh, Kikuyu, Albanian, Jordanian Arabic, and Chinese. These students were conducting research in various fields (e.g., computational biology, software development, renewable energy, sociology, critical thinking in higher education, philosophy, phonology, immunology, assessment, lichen chemistry, digital literacy, and learning motivation) in Hungary during the academic year 2023-2024. The collected data were analyzed following the guidelines of Saldaña (2009). Participants expressed a sense of unpreparedness for the rigors of English academic writing at the starting point of their Ph.D. programs. Throughout their academic journey, they developed research dissemination skills by immersing themselves in the works of prominent scholars in their respective fields. Despite acknowledging the initial quality challenges in their drafts, these students demonstrated persistence in writing and actively sought feedback from seasoned academics. These insights underscore the imperative to offer targeted support for NNES novice writers, nurturing their development into proficient and confident scholar-writers capable of contributing meaningfully to the global academic discourse.

Session I 4

28 June 2024 11:00 - 12:30

Aula 14

Single Paper

Teaching and Teacher Education

The Impact of Digital Tools on Teaching and Learning

Keywords: Competencies, Digital Literacy and Learning, Learning Approaches, Lifelong Learning, Pre-service Teachers, Quantitative Methods, Social Development, Video-based Learning

Interest group: SIG 11 - Teaching and Teacher Education

Chairperson: Xiaoqi Jin, China

Digital Tools for Promoting Teaching Competencies – Evaluation through Longitudinal Analyses

Keywords: Competencies, Pre-service Teachers, Quantitative Methods, Video-based Learning

Presenting Author: Katharina Frank, Johannes Gutenberg-Universität Mainz, Germany; **Co-Author:** Olga Zlatkin-Troitschanskaia, Johannes Gutenberg-Universität Mainz, Germany; **Co-Author:** Jasmin Reichert-Schlax, Johannes Gutenberg-Universität Mainz, Germany

Prospective teachers often report that university teacher training courses do not adequately prepare them to successfully apply their knowledge in complex teaching practices. Practice-related competencies enable teachers to overcome the context-specific demands of teaching, characterized by situativity and immediacy. In recent years, the demand for the targeted use of digital media in classrooms has increased, which requires practice-related digital media competencies from teachers. In this respect, teachers' engagement with how their students use media, for example, is considered to have an effect on how they learn. Effective training of digital media competencies during teacher training can promote teaching, which is supported by digital media. To meet these requirements, multimedia practice-related teaching-and-learning tools, which capture an authentic representation of professional practice among teachers, via video-based elements for example, can effectively complement traditional university approaches. Although it is becoming more important to promote digital media practice-related competencies among teachers, there is currently a lack of high-quality, effective multimedia tools present in teacher education. This paper presents the development of such tools which address the effective implementation of digital media in the classroom and the evaluation of the exemplary tools in a pre-post design with a control group. Based on the results from longitudinal data analyses, the effectiveness of the tools, the influence of teachers' engagement on competence development, and finally the limitations of the study are critically discussed.

A Systematic Review on Digital Technologies Applied in Intergenerational Learning

Keywords: Digital Literacy and Learning, Learning Approaches, Lifelong Learning, Social Development

Presenting Author: Lingran Xu, UCL, United Kingdom; **Presenting Author:** Suzanne May Shwen Lee, The University of Hong Kong, Hong Kong; **Co-Author:** Yan Bo Hou, Chinese International School, Hong Kong; **Co-Author:** Hidan Kim, CheongShim International Academy, Republic of Korea; **Co-Author:** Xiaoxuan Fang, The Education University of Hong Kong, China; **Co-Author:** Samuel Kai Wah Chu, Hong Kong Metropolitan University, Hong Kong

Abstract Digital technologies have transformed the educational landscape, creating entirely new opportunities and experiences for intergenerational learning. Although many studies have explored the relationship between the two topics, the types of digital technologies in intergenerational learning have not been adequately researched. The purpose of this study was to systematically review the outcomes and impacts of digital technologies on intergenerational learning. The study results show that a vast majority of the outcomes in intergenerational learning with digital technologies are technological and social. Seniors improved self-efficacy, enhanced e-health literacy, and reduced fear of technology through learning and using hardware and software. In addition, other outcomes such as affective, ontological, cognitive, and academic were also covered, but very few addressed linguistic aspects. Moreover, studies reported learners' gains in social learning, including enhanced teamwork and improved interpersonal and communication skills. However, the lack of familiarity with technology among older adults, which leads to a lack of confidence in its use and potential learning disabilities and factors such as the home environment, resulted in poor outcomes. Based on the findings, future research should focus on increasing self-efficacy and self-confidence in using digital technology among older adults. Importantly, there is also a need for electronic device support for older adults living in poverty. Initiatives can help older adults reduce social isolation and increase autonomy in technology and intergenerational learning in the digital society. As older adults realize that they have valuable knowledge and experience to share with younger generations, younger people can also pass on their expertise in digital technology to older adults. This approach can effectively integrate resources and skills across generations. The recognition fosters self-worth among older adults, increasing their connectedness and engagement with their communities and promoting intergenerational communication, interaction, and inclusion.

Session I 5

28 June 2024 11:00 - 12:30

Aula Máster 1

Single Paper

Cognitive Science, Instructional Design

Self-regulated Learning Strategies

Keywords: Cognitive Development, Emotion and Affect, Goal Orientations, Instructional Design, Learning Strategies, Metacognition, Qualitative Methods, Reading, Self-regulated Learning and Behaviour, Survey Research

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

Chairperson: Jasmin Lillian Bauersfeld, TU Dortmund University, Germany

Students' perceived source of effort: Bridging effort source belief and effort attribution

Keywords: Cognitive Development, Goal Orientations, Qualitative Methods, Self-regulated Learning and Behaviour

Presenting Author: Demi Hao, University of Oxford, United Kingdom; **Co-Author:** Lars-Erik Malmberg, University of Oxford, United Kingdom; **Co-Author:** Gabriel Stylianides, University of Oxford, Cyprus

Learners' perceptions of the origins of study effort are increasingly recognised as a potentially critical perspective for understanding how study effort informs students' judgments of learning (JoLs). This study examined effort source belief (ESB) as a trait-like construct, measured through vignettes, and its alignment with students' situational effort attribution, as reflected by the relationship between JoLs and self-rated effort. Seventy-four university students engaged in self-paced learning with a set of maths and English tasks derived from their curriculum, subsequently rating their effort and JoLs for each task. Factor analyses revealed that ESB vignettes captured both self-oriented and peer-oriented dimensions of ESB. Notably, higher ESB scores correlated with a tendency to associate greater study effort with increased confidence in succeeding in future assessments (i.e., JoLs). Additionally, study time, not self-appraised effort, more consistently and strongly predicts JoLs. This study methodologically advances the field by integrating educational material into cognitive research paradigm and employing mixed effects analysis. Importantly, it bridges two distinct research areas on effort source perception, offering empirical evidence of the congruence between students' effort beliefs and their situational judgments and perceptions of effort.

Exploring Usage of Learning Techniques and Strategies Among University Students in Slovakia

Keywords: Instructional Design, Learning Strategies, Self-regulated Learning and Behaviour, Survey Research

Presenting Author: Peter Seban, Institute for Research of Social Communication, Slovak Academy of Sciences, Slovakia; **Co-Author:** Kamila Urban, Institute for Research in Social Communication, Slovak Academy of Sciences, Slovakia; **Co-Author:** Radovan Šikl, Institute of Psychology, Czech Academy of Sciences, Czech Republic

Effective learning requires students to use a range of learning techniques and strategies (LTSs). However, research shows that students tend to use less effective LTSs like rereading and highlighting, while neglecting more effective strategies like retrieval practice and distributed practice. The present study aimed to investigate LTS usage among 479 university students across different fields in Slovakia. Students completed a questionnaire with open-ended questions about their LTS usage and preferences. Students predominantly use and consider to be efficient less effective LTSs like rereading, note-taking, and highlighting, while rarely using more effective strategies like retrieval practice and distributed practice. Only 17.7% learned about LTSs at school, with most acquiring LTSs through personal experience and interest. Despite more exposure to LTSs, pedagogy students did not significantly differ in LTS usage compared to other majors. The findings indicate students rely on less effective LTSs rather than more effective strategies. Increased instruction may improve learning outcomes for students across disciplines.

The influence of enjoyment on self-regulated learning from texts

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

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

For successful self-regulated learning from texts, learners must accurately judge their comprehension and engage in effective regulation activities to improve their comprehension. Despite the well-known influence of enjoyment on performance, little is known with regard to its role for judgment accuracy and regulation. Recent correlational research indicates that higher levels of positive emotions, such as enjoyment or hope, are related to more overconfident judgments, and higher levels of negative emotions, such as anger and hopelessness, to more underconfident judgments. In the present study, we aim at experimentally investigating the impact of middle school students' enjoyment on self-regulated learning from texts. The experimental group receives an intervention to increase their enjoyment, whereas the control group receives a control intervention. First analyses of data collected from a pilot study show that increased enjoyment does not affect comprehension, judgment accuracy, or improvement in comprehension after regulation. If these results hold true, teachers and learners must be sensitized to the circumstance that enjoyment does not necessarily lead to better self-regulated learning.

Session I 6

28 June 2024 11:00 - 12:30

Aula Máster 2

Single Paper

Higher Education, Teaching and Teacher Education

In-service Teachers' Professional Development

Keywords: Educational Challenges, Foreign and Second Language Acquisition, Higher Education, In-service Teachers, Primary Education, Qualitative Methods, Teacher Professional Development, Teaching / Instructional Strategies

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

Chairperson: Sylvia Gabel, University of Augsburg, Germany

How English as a foreign Language (EFL) instructors improve their Professionalism

Keywords: Educational Challenges, Higher Education, Qualitative Methods, Teacher Professional Development

Presenting Author: HIJJATUL Qamariah, University of Szeged, Hungary; **Co-Author:** Mária Hercz, Eötvös Loránd University, Budapest, Hungary

Professional development in Indonesia has been widely researched. Much research on this topic has been conducted on secondary school teachers' professional development and some investigated the teacher in tertiary education. However, the research on professional development of English as foreign language (EFL) instructors in Higher Education in Indonesia has been neglected, while their role as an English instructors demand an outstanding professionalism to teach a future English teacher. Therefore, this researched was conducted to explore the factors contributing the professional development of EFL instructors in Higher Education in Indonesia. The data was gathered by semi structured interview. Ten participants including five female and five male EFL instructors in some universities in Indonesia. The questions ranged from their views on professional development, efforts they make to improve themselves, and participation in PD programs and activities including personal initiative and institution supports. The interview took place in 35-45 minutes. The data were analyzed by using the MAXQDA tool to find the theme from the interview transcription. The findings of the research showed that there are several themes: (1) efforts for PD (2) EFL instructor beliefs (3) Less institution support, (4) commitment to the job, (5) classroom practice. It is suggested that the EFL instructors can receive support from the institutions. Professional development programs should be provided and are always maintained to sustain.

Keywords: Professional development, EFL Instructor, Indonesia higher education, teaching practice

Mapping job demands-resources and personal demands-resources of beginning primary school teachers.

Keywords: In-service Teachers, Primary Education, Qualitative Methods, Teacher Professional Development

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

Co-Author: Matthijs Warrens, University of Groningen, Netherlands; **Co-Author:** Thibault Coppe, University of Groningen, Netherlands

One of the prominent causes of teacher shortages in primary education is the high attrition rate of beginning teachers. Subsequently, a focus on retention of these teachers is relevant regarding these concerns, since retention is one of the factors that is most responsive to positive interventions to tackle teacher

shortages. To do so, gaining in-depth insights in the specific work characteristics and how they are experienced by beginning teachers, seems relevant. We used the Job Demands and Resources Model (JD-R model) as a comprehensive theoretical lens, as it indicates well-being to be a balance between work characteristics that either enhance stress or well-being. Hence, in this study, we first aimed to identify the specific job demands, job resources, personal demands and personal resources of these teachers. We used a qualitative descriptive design and interviewed 21 beginning primary school teachers. We used thematic analysis to analyze our data. In our results we found categories within each theme; we found eight categories within the theme job demands, six within the theme job resources, three within the theme personal demands and five within the theme personal resources. Our results display a long list of specific work characteristics, and show that not only work characteristics, but also contextual factors and personal aspects and their interactions form the day-to-day experience of beginning primary school teachers. This study reveals that teachers' work characteristics could not be strictly categorized as either job demand or job resource, as is suggested in the JD-R model, but that interactions between context factors, personal aspects and work characteristics determine whether a work characteristic is experienced as demand or resource. This suggests that the theoretical model needs adjustments for this specific context.

Multiliteracies in Practice: Unveiling Multimodal Projects in English Teacher Professional Education

Keywords: Foreign and Second Language Acquisition, In-service Teachers, Teacher Professional Development, Teaching / Instructional Strategies

Presenting Author: Salim Nabhan, University of Szeged, Hungary; **Co-Author:** Anita Habók, University of Szeged, MTA-SZTE Digital Learning Technologies Research Group, Hungary

In the rapid technological advancement and ever-evolving landscape of education, the integration of multiliteracies involving multimodalities has become increasingly crucial. However, research on multimodal practices in the EFL classroom is still under-explored. To bridge the gap and innovate the curriculum of the teacher professional education program (TPEP), we conducted training for in-service teachers (ISTs) on multimodal projects to be implemented in their teaching practices. This study investigated the practical implementation of multiliteracies through the lens of ISTs' multimodal projects in the EFL classroom. Additionally, participants' perceptions of how the integration of multimodal projects into the teacher education curriculum benefits students' learning as well as their challenges and suggestions were also explored. From thirty-three TPEP participants around Indonesia, a total of twelve ISTs (eleven females and one male) volunteered to participate in the study. All participants had teaching experiences. The study utilized semi-structured interviews and teaching reflective journals. The collected data were analyzed using thematic analysis. Findings revealed that ISTs' strategies in integrating multimodal projects included technology integration, multimodal text involvement, incorporating cultural elements, differentiated instruction, collaborative learning, and students' reflective learning. Additionally, IST perceived benefits for students' learning covered promoting creativity and innovation, enhancing critical thinking and problem-solving skills, fostering digital literacy, improving cultural competence, and increasing students' motivation and classroom engagement. The participants also conveyed their challenges with limited resources, time constraints, topic and project selection, and technological proficiency, and provided suggestions on understanding students' learning styles, providing scaffolded instruction and modeling, integrating contextual learning materials, and providing access to technology integration. The study has implications for the development of the teacher professional education program. **Keywords:** multiliteracies, multimodality, multimodal project, teacher professional education

Session I 7

28 June 2024 11:00 - 12:30

Aula 4

Poster Presentation

Assessment and Evaluation, Cognitive Science, Learning and Special Education, Motivational, Social and Affective Processes

Wellbeing in Schools

Keywords: Achievement, Assessment Methods, Attitudes and Beliefs, Conceptual Change, Emotion and Affect, Higher Education, Interest, Metacognition, Personality, Psychology, Quantitative Methods, Secondary Education, Special Education, Survey Research, Tool Development, Well-being

Interest group: SIG 01 - Assessment and Evaluation, SIG 08 - Motivation and Emotion, SIG 15 - Special Educational Needs, SIG 21 - Learning and Teaching in Culturally Diverse Settings

Chairperson: Adrián Solís-Campos, Spain

Validation of the health-promoting lifestyle instrument among Mongolian students: a pilot study

Keywords: Assessment Methods, Higher Education, Tool Development, Well-being

Presenting Author: Erdenezul Uitumen, Doctoral School of Education, Faculty of Humanities and Social Sciences, University of Szeged; MTA-SZTE Health Promotion Research Group, Hungary; **Co-Author:** Klára Tarkó, Institute of Applied Health Sciences and Environmental Education, Juhász Gyula Faculty of Education, University of Szeged; MTA-SZTE Health Promotion Research Group, Hungary

Background: A health-promoting lifestyle is an essential concept for health education. There is a need to measure levels of health-promoting lifestyle in the Mongolian context. The study aimed to validate a Mongolian-language version of the Health-Promoting Lifestyle Profile II (HPLP-II) in university students. **Methods:** The present cross-sectional pilot study was conducted in Ulaanbaatar, Mongolia, among undergraduate students aged 17-25. After a proper linguistic and cultural adaptation of the HPLP-II scale, the psychometric properties were evaluated by Cronbach's alpha and confirmatory factor analysis. **Results:** The CFA findings based on confirmed measurement of six factors were aligned with the original version of the HPLP-II, except for four items. All Cronbach's alpha coefficients indicated satisfactory internal consistency, ranging from .775 to .885. The HPLP-II-Mon has shown a high internal consistency for each subscale (HR .840; N .782; PA .863; SG .882; IR .885; SM .775). The total Cronbach's alpha coefficient was .923, which aligns with the original version of the HPLP-II scale (.943). **Conclusion:** The Mongolian version has good validity and reliability among university students. The HPLP-II is cross-culturally validated and can contribute to a better comprehension of university students' health promotion needs. Additional research is needed to assess the instrument's predictive validity. **Keywords:** Health-promoting lifestyle; instrument validation; university students; Mongolia

Gender and age differences in adolescents' well-being at school: A multi-dimensional approach.

Keywords: Psychology, Secondary Education, Survey Research, Well-being

Presenting Author: Martina Lattanzi, Università Vita-Salute San Raffaele, Italy; **Co-Author:** Gian Marco Marzocchi, Università degli Studi di Milano-Bicocca, Italy; **Co-Author:** Anna Oglioni, Università Vita-Salute San Raffaele, Italy; **Co-Author:** Valentina Tobia, Università Vita-Salute San Raffaele, Italy

Adolescents' well-being is defined as support, confidence, and resources to thrive in contexts of secure and healthy relationships, realizing full potential and rights (Ross et al., 2020). One of the crucial places to measure adolescents' well-being is the school context (Hascher, 2008). Among multi-dimensional questionnaires aimed at measuring the School Well-Being (SWB) provided by the literature (e.g., Tobia et al., 2019; Tomin & Cummins, 2011), the School Well-being Questionnaire (QBS; Marzocchi & Tobia, 2015) is a self-report tool that investigates different aspects of school life. The present study is aimed at analyzing the Italian QBS score (Tobia & Marzocchi, 2015) – a questionnaire originally standardized on primary and middle school children – in a group of adolescents (high school), analyzing the differences based on gender and school level. 1322 high school students participated in the research. Our results demonstrate that there is an effect of both gender and age, in particular students in the Triennial Period (TP, 11th – 13th grade) had higher scores in some components of School Well-Being, compared to students in the Biennial Period (BP; 9th – 10th grade). Regarding the effect of gender, we found that females had higher scores on the Satisfaction and recognition scale, whereas males obtained higher scores on the scales assessing Relationships with classmates, Emotional Attitude in School, and Sense of Self-Efficacy. An analysis of the univariate interaction effects between age and gender, allowed to better describe the pattern of results. These results could be relevant both for assessment and intervention. This study provided several important implications for education professionals. Considering the recently found differentiability of age and gender differences in SWB at school, this work improves understanding of the current state of specific age groups of students' positive development at school.

Implicit and explicit attitudes of student teachers towards homosexual pupils

Keywords: Assessment Methods, Attitudes and Beliefs, Higher Education, Psychology

Presenting Author:Aljagic Aldin, University of Augsburg, Germany; **Co-Author:**Gegenfurtner Andreas, University of Augsburg, Germany

This study aims to investigate the attitudes of student teachers towards homosexual students. As a theoretical basis, the attitude theory, the intergroup contact theory, and the self-categorization theory were used. This study addresses the questions (a) to what extent implicit and explicit attitudes correlate, (b) whether prejudices, social contact, teachers' own sexual orientation, gender, political beliefs, and religiosity predict implicit attitudes, and (c) whether fixation duration and pupil diameter measured via eye tracking differ by category when reading the stimuli in an implicit association test. To answer these questions, 77 student teachers participated in a multi-method study that included an implicit association test, questionnaires, and eye tracking. The results indicate that attitudes toward homosexual students were positive. As expected, implicit and explicit attitudes were not significantly related. In addition, none of the predictors positively predicted implicit attitudes. The fixation duration was similar when reading consistent and inconsistent text stimuli. Only a statistically significant difference in the pupil diameter was found with greater pupil dilation when reading inconsistent pairs. Future studies can build upon these findings to further address attitudes and their influence on teacher professionalism for pre-service and in-service teachers.

Surprise, curiosity and confusion: Epistemic emotions during high confidence errors

Keywords: Conceptual Change, Emotion and Affect, Interest, Metacognition

Presenting Author:Katerina Nerantzaki, Aristotle University of Thessaloniki, Greece; **Co-Author:**Panayiota Metallidou, Aristotle University of Thessaloniki, Greece; **Co-Author:**Paraskevi Stergiadou, Aristotle University of Thessaloniki, Greece

The present study aimed to examine the hypothesis that errors in cognitive processing, accompanied by a high feeling of confidence about the correctness of the answer ("high confidence errors") would elicit epistemic emotions. Well-known decision-making tasks which tend to activate faulty heuristic solutions were used as epistemic emotions elicited situation after receiving feedback for the correct answer. The sample consisted of 302 undergraduate and postgraduate students of Greek Universities. Participants were tasked with selecting what they believed to be the correct answer among alternatives and providing self-reports on the perceived difficulty and confidence. Performance in each task was followed by external feedback namely if the answer is correct or not. Epistemic emotions, namely surprise, curiosity and confusion, were reported immediately after feedback. The results verified the hypothesis that high confidence errors consist a significant eliciting factor of basic epistemic emotions, illustrating thus the role of unexpected feedback as a significant elicitor of surprise, curiosity and confusion. Moreover, it was verified the contribution of cognitive and metacognitive factors on the formation of epistemic emotions. Direction for future research and educational implications are discussed.

Trajectories of Non-intellective Factors, Learning Outcomes, and Wellbeing in Secondary Schools

Keywords: Achievement, Personality, Psychology, Well-being

Presenting Author:Abdullah Alhowail, Durham University, United Kingdom

In the dynamic educational environment of secondary school students, understanding the multifaceted interplay between non-intellective factors, academic achievement, and overall well-being is essential. Adolescents undergo rapid cognitive, emotional, and social development during these crucial and formative years, which constitute a time of identity formation, self-discovery, and goal exploration. However, the complex impact of these non-intellective factors on daily learning experiences and psychological well-being remains under explored, particularly in KSA. In this longitudinal study, psychometric tests were used together with a comprehensive, experience-sampling approach to address the gap in the research identified above. In this study, personality characteristics, behavioural and emotional skills, and grit were examined to identify how these factors affect secondary school students' psychological well-being and academic achievement. During this critical developmental stage, students aged 16-18 were investigated in five waves across two academic years so as to appreciate the unique challenges and opportunities they face during these years. The investigation focused on well-being as one educational outcome, assessed using the Positive and Negative Affect Scale and the Satisfaction With Life Scale. In addition, the Grade Point Average (GPA) was used as a metric to provide a comprehensive overview of the students' progress in terms of academic achievement assessments. For data analysis, multi-level modelling is used, which will be completed well in advance of the upcoming conference, ensuring a compelling and conclusive presentation of the study's findings. Psychometric tests are used in this study to examine longitudinally personality traits, behavioral and emotional competencies, and grit among Saudi Arabian secondary school students. This research seeks to provide actionable insights for educators and policymakers in Saudi Arabian secondary schools by emphasising the importance of non-intellectual factors in academic discourse alongside traditional academic achievement. In addition to fostering academic excellence, the findings aim to foster student well-being through the creation of supportive educational environments.

Situational perception and aggression in a group of youth with special educational needs

Keywords: Personality, Psychology, Quantitative Methods, Special Education

Presenting Author:Karol Konaszewski, University of Białystok, Poland

Aggression in a group of adolescents with special educational needs who have been referred by family courts to juvenile detention centers and its most obvious manifestations remain a serious problem for all personnel involved in parenting, education and therapy. Some features of the perception of the situation may be important for understanding why some people behave aggressively or do not behave in such a way. People may behave aggressively because they perceive the situation as characterized by certain adversities, or they perceive the situation as inherently negative and therefore requiring action to avoid dangers. Individuals may also be inclined to behave inconsistently with social norms if they misread the situation as providing an opportunity to cheat. Therefore, the purpose of this presentation is to analyze the relationship between perceptions of D.I.A.M.O.N.D.S. (i.e. Duty, Intellect, Adversity, Mating, pOsitivity, Negativity, Deception, and Sociality) situations and aggressive behavior (psychological aggression, verbal aggression, anger, and hostility) in a group of juveniles referred by family courts to probation centers and youth centers in a longitudinal study design. The results of the study indicate the important role of situation perception in the development of aggressive behavior. Perception of the situation in terms of negativity, adversity and deception was positively related to aggression in all dimensions. Situation perception also predicted aggression over time. Practical implications may concern the formation of such situations that can level aggression in a group of adolescents with special educational needs

Session J 1

28 June 2024 14:00 - 15:30

Aula 1

Single Paper

Educational Policy and Systems, Teaching and Teacher Education

Attitudes and Beliefs in Teaching and Learning

Keywords: Attitudes and Beliefs, Communities of Learners and/or Practice, Engagement, Experimental Studies, Gifted and Talented Students, Misconceptions, Qualitative Methods, Survey Research, Teacher Professional Development, Teaching Approaches

Interest group: SIG 06 - Instructional Design, SIG 11 - Teaching and Teacher Education, SIG 14 - Learning and Professional Development

Chairperson: Teresa Vicianová, Masaryk University, Czech Republic

Jazz'n School. Exploring a Teaching and Learning Posture through Practices, Policies, and Cultures

Keywords: Attitudes and Beliefs, Communities of Learners and/or Practice, Engagement, Qualitative Methods

Presenting Author:Sofia Boz, Università degli Studi di Padova, Italy

Present days demand an active mindset that embraces changes. However, the educational system seems to be going in the opposite direction. It keeps a rigid and predetermined structure that hinders a flexible attitude to learning and teaching, disaccustoming everyone to the need to inhabit dynamism and welcome its uncertainties. By virtue of the theorization of pedago-jazz (Santi, 2010, Santi & Zorzi, 2016), jazz has been studied as a particular approach to music that can positively transform traditional education due to some distinctive traits, especially improvisation. The present research originates from a collaboration between

Padua University and Federazione Nazionale Il Jazz Italiano, and has two primary purposes. Firstly, by means of Grounded Theory method, it aims to outline a jazzing posture suitable for learning and teaching. In order to do so, it will be necessary to start by bringing out fundamental elements of the musical genre in question from semi-structured interviews with groups representing three dimensions, from Index for Inclusion (Booth & Ainscow, 2000, 2002, 2011), which make it possible to keep the dynamism of emerging problems and solutions alive. Jazz musicians (practices dimension) who have experience in education, representatives of jazz organizations (policies dimension) in Italy, and experts from various fields (cultures dimension) who gave thought to the topic. Secondly, the creation of a tool will respond to the goal of encouraging a more conscious networking between musicians, which allows to reflect critically on potential of a "jazzing didactics", stressing on teaching methods regardless of jazz as a discipline. The overall aspiration is to reassess pedago-jazz, exploring further aspects, and enrich it with new perspectives.

Reducing Stereotypes Toward the Gifted: Investigating the Robustness of Refutation Texts

Keywords: Attitudes and Beliefs, Experimental Studies, Gifted and Talented Students, Misconceptions

Presenting Author:Vanessa Clauss, Christian-Albrechts-University of Kiel, Germany; **Co-Author:**Steffani Sass, Christian-Albrechts-University of Kiel, Germany; **Co-Author:**Friederike Zimmermann, Kiel University, Germany

Gifted individuals encounter different stereotypes concerning their socio-emotional development. Research leans towards a positive connection of giftedness and socio-emotional development, as the harmony hypothesis proposes. The contrasting disharmony hypothesis postulates that gifted individuals experience more difficulties in their socio-emotional development than their non-gifted peers. Stereotypes aligned with the disharmony hypothesis seem to be deeply entrenched in society and strongly influence the lives of the gifted, especially in education. With the aim of reducing the described misconceptions, this study utilized a refutation text to convey evidence-based knowledge. Additionally, the longer-term effect of the refutation text intervention was examined. In an experimental prospective study, N = 191 student teachers were randomly assigned to refutation text-intervention group or a control group and were followed up ten months later. Regression analyses show a significant and lasting influence of the refutation text on the stereotypes towards gifted students in the expected direction. A further study will investigate whether the initially observed positive influence of the refutation text on stereotype reduction remains stable when encountering stereotype-activating information.

EFL Teachers' Pedagogical Beliefs, PCK, and Material Use: Instrument Adaptations and Validations

Keywords: Attitudes and Beliefs, Survey Research, Teacher Professional Development, Teaching Approaches

Presenting Author:Nurul Fitriyah Almunawaroh, Doctoral School of Education, University of Szeged, Hungary; **Co-Author:**János Steklács, Doctoral School of Education, University of Pécs, Hungary

Teachers' pedagogical beliefs (PB) and knowledge base of teaching play a prominent role in determining their instructional practices, including instructional material use (MU). Instructional materials, which provide students with information and facilitate learning, allow meaningful learning to take place. However, teachers' MU likely affects the effectiveness of their teaching, and the decision on their MU relies on their PB and their knowledge base of teaching, which includes pedagogical knowledge (PK), content knowledge (CK), and pedagogical content knowledge (PCK). Although some studies have investigated how teachers' PCK affects their pedagogical beliefs, studies investigating the interrelationship between teachers' PB, PCK, and MU are absent. Consequently, there is yet an instrument that measures the interplay of these essential factors in English language teaching (ELT). Therefore, this present study aimed to adapt and validate the EFL teachers' PB, PCK, and MU. 260 in-service secondary school English teachers in Indonesia participated in the study. The validated version on EFL teachers' PB, PCK, and MU (EFLT-PBPCCKMU) had six factors and 25 items measuring teachers' PB, PCK, and MU using the 5-point Likert scale. The EFLT-BPCKMU scale had satisfactory psychometric characteristics and model fits, as demonstrated by exploratory and confirmatory factor analysis results.

Session J 2

28 June 2024 14:00 - 15:30

Aula 14

Single Paper

Educational Policy and Systems, Learning and Social Interaction

Collaborative Learning in Higher Education

Keywords: Cooperative / Collaborative Learning, Creativity / Divergent Thinking, Developmental Processes, Engagement, Higher Education, Self-efficacy

Interest group: SIG 18 - Educational Effectiveness and Improvement

Chairperson: Shan Tuyaeerts, KU LEUVEN, Belgium

Antecedents of innovative teamwork behaviour: A systematic literature review

Keywords: Cooperative / Collaborative Learning, Creativity / Divergent Thinking, Developmental Processes, Higher Education

Presenting Author:Idwer I Doosje, Universiteit Utrecht / Hogeschool Utrecht, Netherlands; **Co-Author:**Simon Beusaert, Maastricht University, Netherlands;

Co-Author:Kirstin van Lommel, Hogeschool Utrecht, Netherlands; **Co-Author:**mieke koeslag-kreunen, Hogeschool Utrecht (University of Applied Sciences Utrecht), Netherlands

Because of knowledge that evolves quickly and the introduction of new technology, including artificial intelligence, the society and labour market is experiencing transitions. These transitions require responsive higher education institutions which adapt to a changing labour market and thus optimally support students in the development of the skills, knowledge and attitudes required. Therefore, higher education employs various educational innovations. However, the development and realisation of educational innovations within educational institutions is complex and vulnerable to failure. As a consequence, innovation projects stagnate and new innovations follow-up at a rapid pace. To handle the complexity of innovation, diverse ideas and the exchange of those ideas regarding the innovation process are crucial. Through the exchange of knowledge, ideas and resources, assumptions can be challenged, problems may be viewed from different angles, and new insights can be developed. The simple sounding advice is: in any case, innovate together. Teams are important vehicles to reflect continuously on educational practice and to make evidence-informed decisions about the course of action within an innovation project. Although sharing of knowledge and resources within teams is promising, it is often challenging to make the most of these connections. Reasons being lack of time or team members that do not feel safe to speak up or to share their best errors (Edmondson, 2013; Koeslag-Kreunen et al., 2018). Moreover, while much is known about how we can stimulate innovative work behaviour of individuals (IWB), we do not know how we can stimulate and understand this innovative behaviour on a team-level (Widmann et al., 2016). This systematic scoping review explores what physical and cognitive activities teams can undertake to realise innovations at different stages of the innovation process. This paper will (1) define innovation at a team level and (2) identify antecedents that support this innovative teamwork behaviour.

Engagement in Challenge-based Learning for Interdisciplinary Project Management Efficacy Beliefs

Keywords: Cooperative / Collaborative Learning, Engagement, Higher Education, Self-efficacy

Presenting Author:Selina Michel, Technical University Munich, Germany; **Co-Author:**Manuel Förster, Technical University of Munich, Germany

Interdisciplinary collaboration and project work are key to solving today's societal challenges. Self-efficacy beliefs in planning, ethical sensitivity and interprofessional communication are relevant for effective interdisciplinary project management. Challenge-based Learning (CBL) is an interdisciplinary educational approach which encourages learning while working on real-world challenges and aims to prepare learners to tackle societal challenges in interdisciplinary project work. Previous research and the theoretical work by Bandura (1977) suggest that if students share a positive perception of interdisciplinarity, student engagement can contribute to the development of relevant self-efficacy beliefs in interdisciplinary project management by supporting sources of self-efficacy. Currently, there is limited empirical evidence for these associations for CBL. Therefore, this study investigates the influence of the perception of interdisciplinary team composition on student engagement (Research question 1) and the influence of student engagement in CBL on interdisciplinary project management efficacy beliefs (Research question 2). In a cross-sectional design, N = 87 students from four partner universities of a European university alliance were surveyed at the end of a joint CBL course by using standardized scales. The path model shows significant paths for the

perception of interdisciplinary team composition on all components of student engagement. However, the results indicate that not every component of student engagement influences every efficacy belief relevant to interdisciplinary project management. Significant associations between emotional engagement and ethical sensitivity, cognitive engagement and interprofessional communication and behavioral engagement and planning as well as interprofessional communication are shown. Implications for research and educational practice are discussed. To conclude, CBL shows the potential to prepare learners for interdisciplinary project work on societal challenges.

Session J 3

28 June 2024 14:00 - 15:30

Aula Máster 2

Single Paper

Teaching and Teacher Education

Teaching and Instructional Strategies

Keywords: Action Research, Competencies, Game-based Learning, Inclusive Education, Inquiry Learning, Qualitative Methods, Science Education, Secondary Education, Teacher Professional Development, Teaching / Instructional Strategies, Teaching Approaches, Well-being

Interest group: SIG 11 - Teaching and Teacher Education

Chairperson: Lena Sofie Kegel, University of Münster, Germany

50 Years of Literature Teaching in a Democratic Portugal: Teachers' Life Histories

Keywords: Qualitative Methods, Secondary Education, Teacher Professional Development, Teaching Approaches

Presenting Author: Andressa Godoy, University of Porto, Portugal; **Co-Author:** Amélia Lopes, University of Porto, Portugal

This research project aims to understand the evolution of Literature teaching in Portugal during the 50 years since the Carnation Revolution. We aim to write professional life histories of Secondary teachers who have taught or are currently teaching Literature and to characterise the Literature teaching paradigms that have shaped this field over time. The study consists of three phases, designed according to the biographical-narrative life history methodology. The first one involves an analysis of the institutional and academic discourses regarding Literature teaching that may have impacted teachers' professional practices, which results we present in this paper. In the second one, we plan to conduct semi-directive interviews with teachers who began their careers around the time of the Revolution and, based on their narratives, write their life stories. In the last phase, we will triangulate the results and analyses obtained by the two previous steps to write the prototypical professional life histories of Literature teachers and to characterise the paradigmatic evolution of Literature teaching in Portugal since the decade of 1970s. We hope the project will contribute to a better understanding of the role of Literature teaching in Portuguese society and its evolution in the context of democratic transition.

Using Gamification Elements as a tool for species protection awareness

Keywords: Game-based Learning, Inclusive Education, Inquiry Learning, Science Education

Presenting Author: Ann-Katrin Krebs, Leuphana University Lüneburg, Germany

Theoretical Background: Species protection awareness, especially for bats facing extinction, is crucial (Wolf, 2023; Wieringa, 2022). Learning offers use gamification to focus on bat habitats, involving pre-service STEM teacher students (Mee Mee et al., 2021; Mee Mee et al., 2022). They develop tailored biology-based offers using the 5E-Model (Bybee et al., 2006; Stemann, 2019), gaining teaching experience (Freericks et al., 2017).

Key Objective: The aim is to evaluate gamification impact on species protection awareness among pupils and teacher students.

Research Design and Methodology: A design-based research approach collects qualitative and quantitative data, utilizing digital media, adapted materials (e.g. for more inclusive teaching), and gamification elements (analogue and hybrid). In-depth interviews explore species protection awareness, focusing on habitats, endangered species awareness, and bat-related fears (Pyhel et al., 2017; Prokop & Tunnicliffe, 2008). Qualitative and quantitative data is collected through pre-post interviews and online questionnaires (Vincenot et al., 2015).

Findings: Pupils find bats fascinating, viewing them as "heroes in the night sky" with desired "superpowers". With different gamification elements (analogue and hybrid), pupils gained interest in species protection of bats. Most of the 69 teacher students, predominantly female (85%), express interest in gamification but struggle with technical aspects. Despite concerns, they believe the offers enhance student motivation. **Conclusions:** Learning offers with gamification elements hold potential for increasing species protection awareness in both teacher students and pupils. Teacher students need support in using digital media and gamification for effective teaching.

Higher secondary school teachers' experience with uncertainty: a case study

Keywords: Action Research, Secondary Education, Teacher Professional Development, Teaching Approaches

Presenting Author: Aet Raudsep, University of Tartu, Estonia; **Co-Author:** Emanuele Bardone, Institute of Education, University of Tartu, Estonia

Uncertainty in an educational setting is often seen as something to be diminished and possibly avoided (cf Testa et al, 2020; Schuck & Buchanan, 2012; Jordan, 2015; Mintz, 2016, Hare, 2012). The study invited three teachers interested in implementing potentially positive practices from different subject areas and geographical locations to experience uncertainty and reflect on it. Bringing in new and innovative tasks to their higher secondary students, the teachers approached curricular units from an angle they had never tried before, thus subjecting both themselves and their students to uncertainty. Teachers reflected on their experience both in a journal format and in semi-structured interviews that provided data for the research. The collected data shows that teachers' attitude towards uncertainties changed during the research and the more comfortable teachers felt with uncertainty the more their attention shifted from organisational matters to better understanding of study content, teacher-student relationships and trust in classroom.

Professional competence components for beginning teachers' and quality of instruction and well-being

Keywords: Competencies, Teacher Professional Development, Teaching / Instructional Strategies, Well-being

Presenting Author: Hannah Kirschning, University of Kiel, Germany; **Co-Author:** Andrea Bernholt, Leibniz Institute for Science and Mathematics Education (IPN), Germany; **Co-Author:** Friederike Zimmermann, Kiel University, Germany

Teacher's professional competence is crucial for their effective teaching. In addition to cognitive components, non-cognitive affective-motivational components are considered relevant for teaching behavior and for the long-term maintenance of teachers' future professional well-being. This study focuses on the affective-motivational components of teachers' professional competence for their teaching quality and occupational well-being. The study drew on a sample of N = 55 teachers at the beginning of their careers and their 2,453 students in grades 5-12. Professional competence components, including beliefs, motivation, and self-regulation, were assessed at the end of the pre-service teacher training; teaching quality, including cognitive activation, classroom management, and learning support was utilized from the student's perspective, and occupational well-being, including work engagement and burnout from the teachers' perspective, in the first year of the profession. Latent multilevel structural equation modeling revealed that enthusiasm for teaching is particularly relevant for cognitive activation, learning support, vigor, and emotional exhaustion, and that reflection of teaching contributes to work engagement. The findings emphasize the importance of affective-motivational competence components at the end of training for the quality of teaching and for teachers themselves.

Session J 4

28 June 2024 14:00 - 15:30

Aula 4

Poster Presentation

Assessment and Evaluation, Learning and Instructional Technology

Digital Literacy and Reading

Keywords: Comprehension of Text and Graphics, Digital Literacy and Learning, Digitalisation, Doctoral Education, Educational Technologies, Experimental Studies, Eye Tracking, Feedback, Knowledge Construction, Metacognition, Multimedia Learning, Primary Education, Quantitative Methods, Reading, Secondary Education

Interest group: SIG 02 - Comprehension of Text and Graphics

Chairperson: Anabela Caetano Santos, Portugal

A pilot study on the use of pictures to facilitate reading comprehension in children.

Keywords: Comprehension of Text and Graphics, Doctoral Education, Experimental Studies, Reading

Presenting Author: Vanessa Fernández-Torres, Facultad de Psicología, Universidad de Sevilla., Spain; **Co-Author:** Antonio José Hermoso Moral, Facultad de Psicología, Universidad de Sevilla, Spain; **Co-Author:** David Saldaña, Universidad de Sevilla, Spain; **Co-Author:** Isabel R. Rodríguez-Ortiz, Universidad de Sevilla, Spain

Throughout schooling, children are confronted with more difficult texts accompanied by increasingly complex images. Images in educational materials are intended to facilitate understanding of the text. When a learner finds it difficult to understand, the presence of images allows attention to be diverted to them, thus providing an additional source of information. However, the evidence on the use of pictures to improve reading comprehension is not conclusive. This pilot study created three imaging functions based on the proposals of Levin (1981) and Carney & Levin (2002). The main objective is to evaluate the impact of different types of images (decorative, contextualising, and structural) on reading comprehension. It is hypothesised that decorative pictures will not facilitate comprehension, while contextualising and structuring pictures will improve reading comprehension. Forty-five participants aged 8 to 11 years were tested. In two sessions, nine texts were presented under four conditions: without image, with decorative image, with contextualising image, and with structuring image. Six open-ended questions per text (3 literal and 3 inferential) were asked. The participants evaluated the difficulty of comprehension and the degree to which the images helped them understand the text. The results obtained during the study sessions were open-ended responses given to the literal and inferential questions, as well as the degree of perceived difficulty of the text and the perceived level of support from the images. This design will make it possible to analyse the impact of pictures on reading perception and comprehension. The results of this study provide valuable information for educators and designers of educational materials. Due to the lack of clarity in the current research, it highlights the need to determine which types of image are most effective in improving reading comprehension in children.

Planned Study: Eye movement & Alpha changes after a digital reading intervention

Keywords: Comprehension of Text and Graphics, Digitalisation, Educational Technologies, Eye Tracking

Presenting Author: Mario Romero Palau, University of Valencia / Interdisciplinary Research Structure for Reading Research (ERI Lectura), Spain; **Co-Author:** Clara Soberats, University of Valencia / Interdisciplinary Research Structure for Reading Research (ERI Lectura), Spain; **Co-Author:** Ladislao Salmerón, University of Valencia, Spain

Emerging evidence suggests digital reading may hinder attention control, vital for text comprehension. Addressing this, training in digital reading skills represents a key educational challenge. Research questions: The primary goal of this study is to examine how a 16-week digital reading training affects adolescents' reading skills and their neural attention indices during reading. Additionally, the study will explore the influence of question placement (at the end or within the text), question type (localization, local integration, global integration), and feedback type (none, simple, elaborated) on attentional effects. Methods. Co-registered EEG (32 electrodes) and eye tracking data will be collected in a pre-test/post-test design from 60 high school students while reading two texts. The texts are approximately 1500 words long and are divided into nine paragraphs. We created nine comprehension questions (multiple-choice), one per paragraph. Attentional capacity, working memory capacity, and prior knowledge will be included as covariates. Relevance. Such a design will provide pioneering evidence on the attentional neural mechanisms and reading behavior of high school students during digital reading. Ultimately, we will be able to assess the instructional aspects - question type and placement, and type of feedback - that may enhance such attentional mechanisms when specifically trained in a digital platform.

When and how? Evaluating a web-based program to improve digital reading competence in adolescents

Keywords: Comprehension of Text and Graphics, Digital Literacy and Learning, Feedback, Secondary Education

Presenting Author: Lidia Altamura García, University of Valencia, Spain; **Co-Author:** Laura Gil Pelluch, University of Valencia, Spain; **Co-Author:** Amelia Mañá, University of Valencia, Spain; **Co-Author:** Mario Romero Palau, University of Valencia / Interdisciplinary Research Structure for Reading Research (ERI Lectura), Spain; **Co-Author:** Marian Serrano-Mendizábal, University of Valencia / Interdisciplinary Research Structure for Reading (ERI Lectura), Spain; **Co-Author:** Cristina Vargas, University of Valencia / Interdisciplinary Research Structure for Reading Research (ERI Lectura), Spain; **Co-Author:** Ladislao Salmerón, University of Valencia, Spain

In this study, we aim to evaluate the efficacy of a digital reading intervention using a private company platform for secondary school students, focusing on reading comprehension improvement. Concurrently, we investigate changes in students' attention levels and self-regulation abilities throughout the program, along with assessing program usability and student satisfaction upon completion. Our first sub-objective is to establish the question placement—during or after reading the text. While inserted questions within the text serve as prompts to direct attention, post-questions after the text could yield a more comprehensive situation model. Our second sub-objective is to determine the optimal feedback delivery—corrective or elaborated (targeting the use of reading comprehension strategies), as previous literature has only compared elaborated strategic feedback with pure control groups. 2445 students from seventh to tenth grade, will participate in this 16-week program. The study adopts a cluster randomized trial for the experimental conditions (at the classroom level), with pre-post measurements of reading comprehension. As an extension to this study, process-based instruments will be used to measure brain activity (EEG), and eye movements while reading (eye-tracking), before and after the intervention to a portion of the participants.

The relationships between sourcing skills components and intertextual integration in adolescents

Keywords: Comprehension of Text and Graphics, Digital Literacy and Learning, Educational Technologies, Multimedia Learning

Presenting Author: Anna Paola Fallaci, Università degli Studi di Modena e Reggio Emilia, Italy; **Co-Author:** Oriana Incognito, IUL University (Florence) and University of Florence, Italy; **Co-Author:** Christian Tarchi, University of Florence, Italy

In the 21st century the rapid growth of the availability of knowledge resources, due to the increase in the use of the internet, has enhanced interest in the use and processing of information sources. Proficiency in sourcing and intertextual integration constitutes a pivotal facet in the development of digital literacy skills among young students. Identifying source parameters (author, publication date, publisher, etc.) and assessing the author's level of expertise are examples of sourcing skills. The primary aim of this study is to examine the relationships between the competence of sourcing skills with employed by students in the selection of documents and their competence in intertextual integration. A total of 84 students (M-age [SD] = 12.75 [.64]) attending lower secondary school participated in the study. Through an educational web app, students completed a Source Knowledge Inventory-revised (SKI-r). Moreover, students were asked to write an argumentative essay which was later coded with Barzilal coding scheme. Stepwise regression was used to test the association between the components of SKI-r and intertextual integration skills. In line with the literature, the results showed that only the author's expertise influences intertextual integration. These results suggest that it would be useful to explore these skills to design specific interventions.

Reveal the dynamics of metacognitive monitoring in reading comprehension

Keywords: Comprehension of Text and Graphics, Metacognition, Quantitative Methods, Reading

Presenting Author: Eleonora Pizzigallo, University of Padova, Italy; **Co-Author:** Alessandra Zagato, University of Padova, Italy; **Co-Author:** Gerardo Pellegrino, University of Padova, Italy; **Co-Author:** Chiara Mirandola, University of Padova, Italy; **Co-Author:** Agnese Capodiecì, University of Padova, Italy; **Co-Author:** Barbara Carretti, University of Padova, Italy

The study aims to explore whether reading different texts with varying types of questions has positive effects on metacognitive calibration. For this purpose, 407 primary and secondary school students read a text in either its narrative or informative version. Subsequently, students answered 12 multiple-choice

questions, including 6 text-based and 6 inferential questions, indicating correctness and confidence levels. Metacognitive monitoring was assessed using two calibration indices: the degree of accuracy in self-performances and the bias, namely the over- or underestimation of one's own performance. Results showed that primary school students performed better in the narrative text, while in secondary school performance was better in the informative text. Text genre and question type affected the accuracy of metacognitive monitoring mainly in primary school, where students demonstrated higher accuracy in the narrative text and text-based questions. In secondary school, accuracy was higher only for text-based questions in the narrative text. Furthermore, regarding the Bias Index, text genre influenced metacognitive monitoring in primary school students who tended to overestimate their performance for the informative text. In contrast, secondary school students tended to overestimate their performance for the narrative text, and text-based questions in the informative text, showing a higher level of bias. Overall, our results contribute to understanding the factors that impact reading comprehension, emphasizing the crucial role of diverse exposure to texts and questions in refining metacognitive skills across different educational levels.

The effects of generalisations on oral and written text comprehension

Keywords: Comprehension of Text and Graphics, Knowledge Construction, Primary Education, Reading

Presenting Author: Birgit Vogt, University of Koblenz, Germany

The relevance of generalisations for language acquisition has already been emphasised by Vygotsky in his work "Thought and Language" (1964). Despite its long-known role as key skill in language acquisition (Feilke, 2012; Shepard, 1997; Vygotsky, 1964) generalising has received little attention in educational research so far. Although there are studies that deal with generalisations (e.g., Akinwummi, 2012; Christiansen & Chater, 1994; Feilke, 2012; Goldberg, 2009), these are mostly concerned with cognitive processes or with mathematical tasks. Especially the effects of generalisations on specific learning processes have not yet been examined in detail. The process of building generalisations is defined in this study as a linguistic-cognitive process of abstraction from a concrete reference object (the exemplar) that can be clearly identified in an utterance to a superordinate category that summarises all reference objects (exemplars) with common characteristics. In the reverse process of generalisation comprehension, a category is applied to a (different) exemplar that has corresponding characteristics. The question arises as to what influence the ability to generalise has on specific processes attributable to learning in educational settings. This paper therefore examines the extent to which the comprehension of generalisations affects text comprehension (written and oral) and learning success of primary school pupils. The extent to which there is an effect on the comprehension of orally produced texts (e.g., in classroom settings) in contrast to written texts is analysed. As factors influencing the comprehension of generalisations, preconceptions and conceptual change as well as language proficiency are examined in more detail in the course of the study by means of path analysis. The poster describes the theoretical background, the underlying hypotheses and the study design.

Session J 5

28 June 2024 14:00 - 15:30

Aula 5

Poster Presentation

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

Immersive Technologies and Video-based Learning

Keywords: Case Studies, Computer-supported Collaborative Learning, Cooperative / Collaborative Learning, Dialogic Pedagogy, Digitalisation, Emotion and Affect, Higher Education, Immersive Technologies for Learning, Instructional Design, Pre-service Teachers, Problem Solving, Quantitative Methods, Simulation-based Learning, Social Interaction, Social media, Teacher Professional Development, Tool Development, Video-based Learning

Interest group: SIG 06 - Instructional Design, SIG 07 - Technology-Enhanced Learning And Instruction, SIG 11 - Teaching and Teacher Education, SIG 26 - Argumentation, Dialogue and Reasoning

Chairperson: Anni silvola, University of Oulu, Finland

Enhancing student collaboration in technology-enhanced science inquiry

Keywords: Computer-supported Collaborative Learning, Cooperative / Collaborative Learning, Problem Solving, Simulation-based Learning

Presenting Author: Meeli Rannastu-Avalos, University of Tartu, Estonia; **Co-Author:** Leo Aleksander Siiman, University of Tartu, Estonia; **Co-Author:** Mario Mäeots, University of Tartu, Estonia

This study aims to explore the impact of technology on problem-solving skills in collaborative learning. The research acknowledges the importance of understanding these processes due to complex societal issues. Despite the widespread use of collaborative learning in education, there is a lack of understanding of different teaching methods in collaborative behaviour. This study addresses this gap by investigating three research questions: factors influencing students' inquiry and collaboration in computer-based simulations, the impact of group size on collaborative dynamics within these simulations, and how technology can enhance collaborative problem-solving in science lessons. The research is conducted across different grade levels and subjects, such as physics and biology. The study found that group size did not significantly affect collaboration among 5th-grade students. However, in 6th grade, two-person groups showed improved collaboration. While inquiry skills did not vary significantly based on group size in both grades, the generally low inquiry task scores suggest challenges in asymmetrical collaborative inquiry at these grade levels. The methodological approach involves developing prototypes based on our previous findings and testing them in regular classrooms to integrate research insights into practical learning activities seamlessly. The results of this research have significant practical implications for educators, as they provide insights for the development of effective teaching approaches, educational technologies, and teacher training programs. Specifically, the study highlights the importance of incorporating reflection tasks to assess collaboration skills and designing collaborative tasks that promote interdependence to ensure active participation during collaboration. By emphasizing the cultivation of collaborative skills rather than solely focusing on knowledge acquisition, this research serves as a roadmap for bridging the gap between theory and practice, advancing understanding and refining collaborative learning practices to meet the challenges of 21st-century education.

Social Capital Development, Utilization, and Its Darkside in Deep Mediatization Context

Keywords: Digitalisation, Immersive Technologies for Learning, Social Interaction, Social media

Presenting Author: Shu CHENG, The University of Hong Kong, Hong Kong

This study investigates the impact of deeply mediatized contexts on the construction of social relationships among current undergraduate students. Specifically, it explores how digital media reshape students' perceived social reality and influence the development and utilization of social capital within this context as well as its potential negative aspects. Qualitative in-depth interviews were conducted with 18 undergraduate students from an elite university in Hong Kong, capturing variations in age, gender, socioeconomic status, major, experiences and attitudes towards digital socializing. The findings reveal that digital media play a significant role in reframing students' perceived social reality, enabling them to maintain and benefit from existing offline and institutional contacts, while also empowering them to engage with and leverage social capital from online strangers. Students establish loosely mediated relationships based on shared interests, goals, and diverse backgrounds, actively participating within digitally extended networks. They strategically employ different digital media and networking behaviours, carefully balancing the associated benefits and risks, such as privacy concerns, information bubbles, biases, and addiction. The study extends the framework of bonding and bridging social capital within digitally mediated networks, highlighting the loose and wide connection patterns encouraged by digital media. However, it also acknowledges the potential conflicts and negotiation between digital media and human users, which may give rise to dark sides of digital social capital, including privacy risks, exclusive biases, addiction, and restricted access to diverse information and opinions. By shedding light on the dynamics of digitally mediated social relations among undergraduate students, this research contributes to a better understanding of the complex interplay between digital media and social capital in the context of learning.

Immersive Evolution: Navigating Design Appropriation in VR for Workplace Learning

Keywords: Immersive Technologies for Learning, Simulation-based Learning, Tool Development, Video-based Learning

Presenting Author: Stephanie Bowles, Penn State, United States

This research explores design appropriation in workplace learning through an ongoing Co-Design-Based Research (Co-DBR) study at an environmental center. The collaboration, ongoing since April 2022, has been designing and implementing Virtual Reality (VR) modules for workplace training. This study narrows down on design appropriation and follows an ethnographic approach. As the design evolved organically over a year, our perception shifted from a finite outcome to an ongoing process, challenging traditional appropriation frameworks. The analysis reveals four emergent workplace practices: animal familiarity, VR training, video production, and social-cultural practices. These practices showcase the adaptability of animals to VR technology, the evolution of structured VR training patterns, the self-driven initiative of video production, and the playful integration of design elements into workplace culture. The study contributes valuable insights to design-based research and workplace learning, emphasizing the need for a context-specific approach to design appropriation. The organic evolution of workplace practices underscores the potential of VR as a unique tool for learning and highlights the importance of allowing design to unfold organically, fostering strong connections to continuous workplace learning within a community.

Isolated or Integrated? – Instructional Approaches to Foster Professional Vision of Teaching Quality

Keywords: Higher Education, Instructional Design, Pre-service Teachers, Video-based Learning

Presenting Author: Jasmin Lilian Bauersfeld, TU Dortmund University, Germany; **Co-Author:** Patricia Calies, Universität Erfurt, Germany; **Co-Author:** Heike Hahn, Universität Erfurt, Germany; **Co-Author:** Bernadette Gold, TU Dortmund University, Germany

Dimensions of teaching quality are classroom management, instructional and emotional support. To implement teaching quality, teachers need professional vision (PV), which entails noticing and reasoning on relevant classroom situations to generate alternatives of action. When expert teachers notice and reason on situations, they focus on all teaching quality dimensions simultaneously, which, therefore, is an important feature for PV. PV can be fostered with video-based analyses embedded in an effective instructional setting. Research has shown that teaching contents in an integrated way to support retrieval and activation or in an isolated approach to reduce cognitive load can both enhance learning. Therefore, this study examines whether teaching the teaching quality dimensions in an isolated or integrated approach for video-based analyses can foster student teachers' processes of PV more effectively. In a three-week video-based course $N = 138$ student teachers were taught in an isolated (IG1) or integrated approach (IG2) or participated in a mathematics didactics course as the control group (CG). In pre-post-tests, we measured PV in written analyses. We coded the number of noticed events, the mean quality of reasoning, the mean quality of generated alternatives of action, and the mean quality of the simultaneous focus on the teaching quality dimensions. Mixed ANOVAs showed significant differences between the groups in simultaneously focusing on the teaching quality dimensions when reasoning. Planned contrasts indicated the IGs outperformed the CG in generating alternatives of action and in simultaneously focusing the teaching quality dimensions in reasoning. IG2 displayed a stronger simultaneous focus on the dimensions when reasoning, whereas IG1 had a stronger simultaneous focus on the dimensions when generating alternatives of action. Results suggest video-based analyses prompted student teachers to analyze classrooms more action-oriented and capture a classroom's complexity by simultaneously focusing on the three teaching quality dimensions. Possible explanations and limitations will be discussed.

How Emotions and Observed Teaching Quality Influence Student Teachers' Analysis of Classroom Videos

Keywords: Emotion and Affect, Pre-service Teachers, Quantitative Methods, Video-based Learning

Presenting Author: Isabell Tucholka, TU Dortmund University, Germany; **Co-Author:** Bernadette Gold, TU Dortmund University, Germany

Student teachers' professional vision—their ability to notice and interpret relevant classroom events and generate alternative teacher actions—is often fostered using classroom videos (Santagata et al., 2021). However, videos—even of unknown teachers—do not only initiate cognitive but also emotional processes. On the one hand, observing videos may elicit emotions. These may be very individual as emotions are based on a person's appraisal of a situation (Campos et al., 1994) but there are hints that emotions may also be partly connected to the teaching quality level presented in the video (Authors, 2023). On the other hand, emotional reactions may also interfere with cognitive processes (Forgas, 2023) and therefore also students' professional vision. In a 2×3 experiment, we randomly assigned 183 student teachers to six conditions. The two between-subject factors were "classroom management quality" (effective/ineffective) which we applied as an indicator of the teaching quality presented in the videos and "induced emotion" (students received either a positive, negative or no feedback on a classroom management test). A manipulation check asking the students to state their levels of joy and anger showed that the emotion induction was mainly successful: joy and anger levels significantly differed between the groups with induced anger and the groups with induced joy and no emotion induction. Differences between the latter two groups, however, were mostly not significant. After the manipulation check, the students received an open writing assignment and analysed their video by describing the situations they considered relevant regarding classroom management (noticing). They also interpreted these situations and suggested alternative teacher actions. Analyses are currently coded based on a master rating. We will apply ANOVA to check for group differences.

CANCELLED: From teacher-centered to student-owned (...)

Keywords: Case Studies, Dialogic Pedagogy, Teacher Professional Development, Video-based Learning

Presenting Author: Yvonne Dammert, Bern University of Teacher Education, Switzerland

Numerous studies in educational science emphasize the potential of dialogic classroom discussions for promoting students' knowledge and critical thinking. However, many teachers remain ensnared in traditional, teacher-centered discourse patterns. This study investigates the intricate shift from teacher-directed to student-owned discussions, focusing on enhancing dialogic discourse practices within a Teacher Professional Development (TPD) program. Specifically, its objective is to delineate the evolution of teachers' dialogic discourse within this TPD and to differentiate between teachers who embrace a dialogic classroom culture and those who revert to traditional methods. The study is integrated into a one-year intervention to empower teachers to cultivate a culture of dialogic discussions in elementary literature classes through video-based coaching. Nine teachers and 104 students participated in this study. We evaluated the intervention's effectiveness by analyzing small group discussions from experimental and control groups ($N=20$) at two different time points, utilizing Murphy et al.'s (2017) coding guide and a mixed ANOVA. This was followed by a comparative case analysis of two teachers who exhibited different development patterns in dialogic discourse practices. We compared their discussions at four additional time points during the intervention, focusing on their discourse patterns, cognitive engagement, and the quality of student responses. Quantitative findings revealed a marked enhancement in the quality of discussions within the experimental group over time. Contrasting with the control group, the experimental group saw reduced teacher-led discussions; students justified their statements and built upon their peers' insights. Qualitatively, the case study unveiled diverse developmental trajectories among teachers, highlighting the challenges they face in relinquishing control to students while maintaining the cognitive demand of the discourse. Ultimately, the study underscores the imperative for training programs tailored to individual teachers' developmental trajectories.

Session J 6

28 June 2024 14:00 - 15:30

Aula 11

Poster Presentation

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

Teaching Strategies and Instructional Design in Mathematics

Keywords: Achievement, Anxiety and Stress, Attitudes and Beliefs, Cognitive Skills and Processes, Computational Thinking, Experimental Studies, In-service Teachers, Instructional Design, Learning Approaches, Mathematics / Numeracy, Motivation, Primary Education, Problem Solving, Qualitative Methods, Special Education, Teacher Effectiveness, Teaching / Instructional Strategies, Teaching Approaches

Interest group: SIG 06 - Instructional Design, SIG 11 - Teaching and Teacher Education, SIG 15 - Special Educational Needs

Chairperson: Antonia Fischer, Goethe University Frankfurt, Germany

Playing with half a toy? Effects of emphasizing mathematical operations when solving word problems

Keywords: Attitudes and Beliefs, Experimental Studies, Mathematics / Numeracy, Problem Solving

Presenting Author: Marcel Mayr, Johannes Kepler University Linz, Austria, Austria; **Co-Author:** Andrea Wisenöcker, Johannes Kepler University Linz, Austria;

Co-Author:Cornelia S. Große, Johannes Kepler University Linz, Austria, Austria

Providing realistic solutions for realistic word problems has been shown to be challenging. A possible explanation for this are socio-mathematical norms and standards: A person's expectations and beliefs about mathematical problems might impact what kind of solutions they consider adequate. We conducted an experiment (N=131, age= 14-61 years) to investigate if the number of realistic solutions depends on (1) asking participants to make realistic considerations (factor 1 "realistic considerations": with vs. without), (2) asking participants to consider which mathematical operation they would apply, in order to activate socio-mathematical norms (factor 2 "mathematical operations": with vs. without), and (3) whether the division-with-remainder problems contained objects which can only be used as a whole or which would usually be used as a whole (factor 3 "division of object": impracticable vs. uncommon). An analysis of variance with age as a covariate revealed no significant main effect "realistic considerations", $F(1, 119) = 0.06, p = .801, \eta_p^2 = .001$. The request to state suitable mathematical operations significantly reduced realistic solutions (main effect "mathematical operations": $F(1, 119) = 4.20, p = .043, \eta_p^2 = .034$). Realistic solutions occurred significantly more frequently when objects were indivisible (main effect "divisibility of object": $F(1, 119) = 4.73, p = .032, \eta_p^2 = .038$). The main effect "age" was significant, $F(1, 119) = 3.94, p = .049, \eta_p^2 = .032$. Interaction effects yielded no significant results. Overall, the results indicate that the activation of socio-mathematical norms as well as problem characteristics can significantly influence the generation of realistic solutions.

Exploring the interplay: PISA 2022 results, achievement, and teacher dynamics in the classroom

Keywords: Achievement, Anxiety and Stress, Mathematics / Numeracy, Teacher Effectiveness

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Mathematics is a complex subject that requires continuous effort and mastery. Factors affecting mastery include students' emotions, teacher effectiveness, and perceived lesson quality. Many aspects may influence how students manage learning mathematics. For example, teachers' behaviour, such as autonomy support and clear expectations, can significantly influence students' engagement. Positive emotions, such as enjoyment and interest, strengthen motivation, while negative emotions, like hopelessness and anxiety, weaken it. Mathematics anxiety can lead to lower achievement scores, lower self-efficacy, and avoidance patterns. This research aims to understand the effects of perceived lesson quality and teachers' attitudes towards students, mathematics anxiety, and PISA 2022 test results. We found that all variables were significantly correlated to each other. More precisely, mathematics anxiety was negatively correlated with mathematics achievement, perceived lesson quality, and teachers' attitudes toward students. We also found from our regression model that mathematics anxiety, perceived lesson quality, and teachers' attitudes toward students are significant predictors of mathematics achievement, and mathematics achievement, perceived lesson quality, teachers' attitudes toward students, and gender are significant predictors of mathematics anxiety.

Children's perceived effort and learning in (increasing) interleaved practice in mathematics

Keywords: Cognitive Skills and Processes, Computational Thinking, Instructional Design, Mathematics / Numeracy

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Interleaved practice, involving the mixing of tasks from different categories, presents a contrast to blocked practice, which focuses on a single topic. Despite its recognized effectiveness across various learning domains, students often perceive interleaved practice as more demanding and less effective than blocked practice. However, there is a research gap regarding primary students' perceived effort (PE) and perceived learning (PL) in both interleaved and blocked practice, as well as how learners perceive effort and learning in increasing interleaved practice. The study adopts a 3x2-mixed design, incorporating study schedule (between subjects: blocked vs. interleaved vs. increasing interleaved practice) and time (within subjects: after half vs. after full practice time). Approximately 300 third-grade students will participate, instructed in number-based strategies for three-digit subtraction tasks over six lessons in either blocked, interleaved, or increasing interleaved practice. PE and PL were measured using a visual analogue scale on tablets after half and full practice time. Preliminary findings reveal a negative correlation between PE and PL. Initial PE is higher in interleaved practice compared to blocked and increasing interleaved practice. PE decreases over time in interleaved practice, while remaining stable in the other two conditions. Additionally, initial PL is lower in interleaved practice but increases over time, reaching levels comparable to interleaved practice in increasing interleaved practice. In conclusion, these results align with existing research, extending our understanding to primary students and increasing interleaved practice. The study suggests that increasing interleaved learning could mitigate PE and enhance PL.

Enhancing conditional strategy knowledge in math: To block, interleave or interleave increasingly?

Keywords: Instructional Design, Learning Approaches, Mathematics / Numeracy, Primary Education

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Mastering the flexible and adaptive use of subtraction strategies poses a challenge for primary school students. Acquiring this proficiency, students must cultivate adaptive expertise, encompassing conditional strategy knowledge (CSK), e.g., knowing when and why a strategy is appropriate. Interleaved practice emerges as a promising approach to address this challenge. In contrast to blocking, interleaving stimulates comparison processes that foster abstracting conditions for strategy use, potentially facilitating CSK development. Increasing interleaving might optimise interleaved practice: starting with a blocked phase helps students gain confidence in strategies before diving into the interleaved phase. This study investigates whether interleaving fosters CSK and how increasing interleaved practice might enhance its effectiveness over the long term. Approximately 243 German third graders are randomly assigned to a blocked, interleaved or increasing interleaved condition. Across six lessons, all groups are taught to use three number-based strategies for solving subtraction problems. Assessment of CSK occurs through immediate posttest and eight-week follow-up. Preliminary descriptive data from the immediate posttest indicates that third-grade students in the increasing interleaved condition show the highest CSK, followed by those in the pure interleaving condition, while students in the blocked condition demonstrate the lowest CSK. For the follow-up test, we also expect that increasing interleaving will outperform pure interleaving, with both interleaving conditions expected to have an advantage over blocking. Practical implications as well as implications for future research will be discussed.

Cognitive and motivational-emotional profile of students with math learning difficulties

Keywords: Cognitive Skills and Processes, Mathematics / Numeracy, Motivation, Special Education

Presenting Author:Triin Kivirähk, University of Tartu, Estonia; **Co-Author:**Eve Kikas, University of Tallinn, Estonia; **Co-Author:**Mairi Männamaa, Psychology, Estonia; **Co-Author:**Aaro Toomela, University of Tallinn, Estonia; **Co-Author:**Evelyn Kiive, University of Tartu, Estonia

The specific knowledge about the differences in the math-related cognitive skills between low achieving (LA) students and those with a mathematic learning disability (MLD) helps to identify math learning difficulties earlier, which, in turn, leads to avoidance of motivational-emotional problems among the students. There is not enough knowledge about the differences and similarities in the cognitive skills and motivational-emotional factors of students with MLD and LA. This study aims to fill those gaps. Eighty-eight students aged 9-10 years participated in the study. Based on the results of the WRAT-5 test and information from the math teacher, the participants were divided into two sample groups (MLD and LA) and a control group. The students' cognitive skills and motivational-emotional characteristics were measured with a computer-based test battery. The results indicated that executive functioning and cognitive skills like memory, verbal and visual processing, processing speed, and cognitive inhibition are disturbed in both sample groups. The difference between the two groups was revealed only in visual attention, where students with MLD scored lower than students with LA. Concerning motivational and emotional factors, low-achieving students and students with MLD have lower self-perceived ability than typical achievers. Moreover, low achievers have lower learning motivation and higher anxiety levels than typical achievers and even students with math learning disability. However, students with MLD and LA have higher depressiveness compared with typically achieving students.

The relationship between teachers' beliefs about mathematics in primary education

Keywords: Attitudes and Beliefs, In-service Teachers, Mathematics / Numeracy, Primary Education

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Teachers' beliefs provide varying opportunities for students to develop their mathematics competence and to achieve learning outcomes in mathematics. This study aims to investigate primary mathematics teachers' beliefs about the nature of mathematics, about the learning mathematics and self-efficacy beliefs, and to understand the interrelations of these beliefs. This study also explores possible differences between class teachers and subject teachers' beliefs as well as differences related to their major and years of experiences. The study was conducted in Estonia and data from 3rd, 4th and 5th grade teachers (N=127) was included in the analysis. In this study, positive relationships were identified among teachers' beliefs about the nature of mathematics, specifically between an inquiry perspective and a constructivist standpoint. Moreover, teachers' beliefs about the inquiry nature of mathematics were moderately associated with their self-efficacy in cognitively activating students. Noteworthy findings include significantly lower confidence in goal setting among teachers with 16-25 years of experience compared to those with 1-5 years, and subject teachers exhibiting lower confidence in cognitive activation compared to class teachers.

General and Mathematics-specific Aspects of Instructional Quality: A Systematic Literature Review

Keywords: Mathematics / Numeracy, Qualitative Methods, Teaching / Instructional Strategies, Teaching Approaches

Presenting Author: Aslihan Bayrak, Ludwig-Maximilians-Universität (LMU), Germany; **Co-Author:** Stefan Ufer, Ludwig-Maximilians-Universität (LMU), Germany

Over the years, several scholars have investigated the characteristics of instructional quality and many frameworks have been developed in this direction. These frameworks have focused on instructional quality in various aspects including subject-specific, generic, or both. In this context, there has been a need for comprehensive and systematic reviews of existing studies to gain deeper insights into the applied conceptualizations of instructional quality. The main purpose of this study is to analyze the extent to which dimensions of instructional quality measured in existing studies can be assigned to the three basic dimensions of instructional quality, namely classroom management, student support and cognitive activation, and to which extent as well as how they target subject-specific aspects in instruction. A systematic literature review on instructional quality in primary and secondary school mathematics education was carried out according to the PRISMA guideline. A total of 112 papers obtained from the database Web of Science were included and analyzed qualitatively including inductive and deductive coding methods. The N = 1510 identified indicators of instructional quality were coded in terms of the linkage to the three basic dimensions and their subject specificity. We investigated to which extent subject specificity is distinguishable for each basic dimension and which facets within each basic dimension. The results show that cognitive activation was the most frequently identified basic dimension overall. In terms of subject specificity, the indicators refer to student support and classroom management more generally, while those related to cognitive activation are defined more subject-specific. Finally, this paper obtained valuable insights about generic and specific facets for each basic dimension. In this sense, it contributes to the literature by providing insights into the general and subject-specific nature of measures of instructional quality and has implications for future studies to describe and improve mathematics education.

Session J 7

28 June 2024 14:00 - 15:30

Aula Máster 1

Roundtable

Assessment and Evaluation, Learning and Social Interaction, Teaching and Teacher Education

Writing and Literacy in Education

Keywords: Achievement, Anxiety and Stress, Attitudes and Beliefs, Dialogic Pedagogy, Feedback, Mixed-method Research, Motivation, Primary Education, Secondary Education, Social Interaction, Writing / Literacy

Interest group: SIG 01 - Assessment and Evaluation, SIG 10 - Social Interaction in Learning and Instruction, SIG 26 - Argumentation, Dialogue and Reasoning

Chairperson: Suvi Kanerva, University of Helsinki, Finland

Impact of Rubric-Based Dialogic Feedback on Secondary School Students' Writing Motivation

Keywords: Feedback, Motivation, Secondary Education, Writing / Literacy

Presenting Author: Jan-Sébastien Dion, Université de Sherbrooke, Canada

This presentation summarizes an ongoing doctoral research project aiming to investigate the impact of rubric-based dialogic elaborate teacher feedback on the motivation to write and writing performance of secondary school students across a full school year. The study addresses the need to improve writing skills among students, as they are crucial for academic, professional, and personal development. This research adopts a two-phase mixed-methods explanatory sequential design. In Phase 1, after a teacher training we'll provide, a quasi-experimental design will be used in which teachers will systematically combine rubric-based dialogic feedback to writing assessments in half of their groups, while the other half of their groups will serve as control. The motivation to write and writing scores of those teachers' students will be collected three times within the same school year. In Phase 2, semi-structured interviews will be conducted with students whose motivation to write fluctuated most significantly throughout the year, to explore the causes and factors they attribute to this variation. The participants in the study include French teachers (n=20) from secondary 1 to 5 in the province of Quebec, along with their respective students (n=1000-2000). Online questionnaires will be used to assess students' motivation to write, and teachers' feedback practices will be collected through online questionnaires and digitalized written traces. Additionally, students' report card grades in writing will be obtained from teachers as writing performance indicators. The data collected will be analyzed using descriptive statistical analyses for teachers' questionnaires, repeated measures analyses of variance for students' writing motivation and performance, and thematic content analysis for the semi-structured interviews. This roundtable communication aims to briefly present this project and mainly discuss the mixed-methods design of the study. As the project is ongoing, data collection has not yet taken place, and the results will be presented in future research outputs.

Changes in reading habits among Georgian and Finnish adolescents during the Covid-19 pandemic.

Keywords: Anxiety and Stress, Attitudes and Beliefs, Social Interaction, Writing / Literacy

Presenting Author: Zhuzhuna Gviniashvili, Åbo Akademi University, Finland

The psychological impact of COVID-19 and its associated restrictions, such as social distancing and remote work/ educational processes, surpassed the direct effects of the infection. At the beginning of the pandemic, the Director-General of the World Health Organization encouraged people to read, as it alleviates anxiety and nurtures hope. Pre-pandemic research indicates that adolescents often neglect leisure reading due to long school days, excessive homework, preferences for more social activities, and a lack of free time. The COVID-19 pandemic presents a unique opportunity to challenge the previously mentioned views and explore changes in reading habits during pandemics when many external factors affecting reading engagement had been eliminated. The study not only investigates the impact of COVID-19 on reading frequency but also delves into changes in reading formats (print vs. online), the choice of reading materials, library usage, and Georgian and Finnish students' perceptions of reading during the pandemic context. As a cross-cultural study, it allows us to observe the influence of pandemic policies on reading behaviour and patterns. This study employs quantitative research methods. Data is collected through a single comprehensive survey, comprising a preliminary section with three demographic questions and two subsequent sections. The findings from the first part of the survey will be represented graphically for a straightforward understanding of the findings. The second part of the survey will be analysed using the SPSS 26.0 statistical package. Employing descriptive statistics, ANOVA, post hoc tests, Chi-Square tests, Cross-tabulation, and other relevant statistical analyses, the results will be summarised and presented through appropriate statistical measures. The analysis of the data, as well as the search for the most appropriate ways to present the findings, is in progress and roundtable discussion will be an invaluable opportunity to gain some useful insights.

Language-promoting questions in primary classroom-discourse – how do they affect student learning?

Keywords: Achievement, Dialogic Pedagogy, Mixed-method Research, Primary Education

Presenting Author: Lena Biele, Humboldt Universität zu Berlin, Germany; **Co-Author:** Rebecca Höhr, Goethe-Universität Frankfurt am Main, Germany; **Co-**

Author:Anna Volodina, Institut zur Qualitätsentwicklung im Bildungswesen (Institute for Educational Progress), Germany; **Co-Author:**Birgit Heppt, Humboldt-University Berlin, Germany

Classroom discourse does not only constitute one of the core components of learning processes in school (Ehlich, 2009), but holds the potential to considerably accelerate student learning (Alexander, 2018; Ing et al., 2015; Larrain et al., 2019; Sedova et al., 2019). Therefore, talk-oriented teaching practices, which draw on the close link between language and learning, have significantly gained in popularity. Since the relevance of (academic) language proficiency for school success has been demonstrated repeatedly (e.g., Henrichs & Leseman, 2014; Schuth et al., 2017), teachers face the task to ensure high-quality classroom discourse, integrating language sensitive teaching practices into their regular classroom teaching (Heppt et al., 2022; SWK, 2022). When it comes to guiding student into higher-order thinking and the production of high-quality speech, teacher questions are considered to be a main tool. With regard to this, some questions, such as open-ended questions, seem to be more effective than others, e.g., closed questions (Gabler et al, in press; Lee & Kinzie, 2012; Rapanta & Macagno, 2023; Studhalter et al., 2021). Yet, more differentiated insights into what kind of questions serve as effective language support remain scarce (Walsh & Hodge, 2016). The present study examines the role of teachers' language-promoting questioning techniques for student learning. Thus, our main objectives are to (1) further describe teacher questions with regard to their language-promoting quality and (2) to investigate their contribution to student learning. In our secondary data analysis, we will employ a mixed-methods approach, using both videodata and competence data from around n=350 first grade students in n=18 classrooms in n=13 schools in Germany. We will present findings on the frequency and distribution of teachers' use of language-promoting questions in classroom discourse in German and Math lessons and, using regression modeling, investigate their link to student learning in German-, Math-, and language-related achievement.