27 August 2021 09:00 - 10:00
Session Room 16
Single Paper
Higher Education, Learning and Instructional Technology

Educational and Learning Technologies

Keywords: Argumentation, Educational Technology, Higher Education, Learning Technologies, Meta-analysis, Writing/Literacy
Interest group: SIG 04 - Higher Education, SIG 12 - Writing
Chairperson: Irina Engeness, Norway

Effects of digital media on learning in higher education: A systematic review of meta-analyses
Keywords: Educational Technology, Higher Education, Learning Technologies, Meta-analysis
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This systematic review of meta-analyses addresses the extent to which learning outcomes can be promoted by digital media in higher education. Meta-analyses on the impact of digital media on learning in higher education typically focus on moderator analyses with respect to specific technological features or features of specific instructional approaches (e.g. "realism of graphics" in game-based learning). Unlike these previous meta-analyses of learning with digital media, this systematic review aggregates the effects of digital media by the level of learning activity they induce to gain more general and transferable insights into the effects of digital media on learning. To this end, the control and experimental conditions of 462 effect sizes from 79 meta-analyses were coded using the ICAP framework. The ICAP framework distinguishes four levels of cognitive activation inferred by observable behavior: (1) passive, (2) active, (3) constructive, and (4) interactive. The positive effects of digital media within ICAP levels on learning outcomes in higher education (RQ1) support the hypothesis that digital media are effective in increasing the likelihood of certain learning activities. The positive effects of digital media across ICAP levels on learning outcomes (RQ2) indicated that digital media can be used effectively to increase activity levels. It should be noted, however, that due to the confounding of activity level and digital media use, caution is advised when interpreting this as a causal effect of digital media. In sum, these results support the ICAP framework and assumptions about the relationship between varying levels of activity and learning outcomes.

Speech-to-Text and the Struggling Writer: Effects on Learning a New Writing Strategy
Keywords: Argumentation, Educational Technology, Learning Technologies, Writing/Literacy
Presenting Author: Katrina Haug, Western University, Canada; **Co-Author:**Perry Klein, The University of Western Ontario, Canada

Speech-to-text (STT) is a readily used accommodation for children and adults who struggle with written composition. While there is evidence to support the use of speech-to-text, few studies have considered the impact of STT on learning a new writing strategy. The purpose of the current study was to evaluate STT and its impact on learning a new writing strategy (e.g., persuasive writing) particularly for students considered struggling writers. Participants included 79 students in grades 4 – 6 who received persuasive writing instruction and STT training. All students were randomly assigned to either the handwritten or STT treatment condition. A pretest-post-test design was used to capture student learning and writing improvement related to persuasive writing. A repeated measures analysis of variance (ANOVA) was used to examine the relationship between struggling and not struggling writers and their achievement from pretest to post-test in both the handwritten and STT conditions. First analysis results indicate that for weaker writers, speech-to-text was more effective then handwriting in learning a new writing strategy, while for average or above average writers, handwriting was most effective. Overall, the current study provides evidence to support the use of speech-to-text technology to aid struggling writers and filled a gap in the literature between speech-to-text as beneficial on a single text to improve spelling and speech-to-text as support to learn a new genre for struggling and non-struggling writers.

Session W 10

27 August 2021 09:00 - 10:00
Session Room 18
Single Paper
Teaching and Teacher Education

Educational Psychology and Motivation

Keywords: Educational Psychology, Motivation, Secondary Education, Self-efficacy, Teaching/Instruction
Interest group: SIG 11 - Teaching and Teacher Education
Chairperson: Scarlett Madeline Kobs, Humboldt Universität zu Berlin, Germany

Teachers' communicative style: The role of autonomy, competence and relatedness
Keywords: Educational Psychology, Motivation, Secondary Education, Teaching/Instruction
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Teachers' communicative style has been recently addressed by researchers, yet the reason why teachers use a certain style remains unexplored. This study aimed to identify profiles of teachers' communicative style and how these relate to teachers' needs (autonomy, relatedness and competence) and students' performance. The sample comprised a total of 48 teachers and 1150 students. At the student-level, latent profile analysis showed three profiles: gain-framed messages (GFM), no-messages (NM), and all-messages (AM). At the teacher-level, multilevel profile analysis showed an active and a passive profile. Results indicated that both, the thwarting and the fulfilment, of teachers' basic needs was related to the communicative style they adopted. Likewise, the communicative style adopted by teachers was related to student's performance. Thus, present findings help to better understand why teachers adopt certain behaviours and how these relate to student outcomes.

Do motivational messages predict motivation to learn and performance?
Keywords: Educational Psychology, Motivation, Secondary Education, Teaching/Instruction
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Teachers can use motivational messages during classes to engage their students in school-tasks. These messages are characterized by both the frame (gain-framed vs loss-framed) and by the motivational appeals within them (external, introjected, identified, and intrinsic). For example, teachers can rely on gain-framed intrinsic messages such as *"If you work hard, you will learn interesting facts*" or they can rely on loss-framed extrinsic messages such as*"Unless you work hard, you will get into trouble"*. The present study examines how teachers' motivational messages relate with student's motivation to learn and performance. A total of 1209 students between grades 8 and 12 participated in the study. Participants completed self-report measures of teachers' motivational messages and motivation to learn. Performance was measured using students' grades obtained from school records. We performed a multilevel structural equation model (ML-SEM) to test the hypothesised relations among variables. ML-SEM showed that teacher motivational messages indirectly predicted student's performance via motivation to learn. The present findings highlight a resource teacher can rely on to motivate students and improve their academic outcomes. These results set the basis for future educational interventions targeting teaching practices.