

Previewing AERA 2024

Editors
Anna Brady
Lauren Cabrera

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If you are looking for organizations to donate to this year, consider our SSRL SIG. In addition to basic operating costs, we use funds to support our three awards and the Graduate Student Mentoring Program. With your help, we can continue to support initiatives like these and possibly expand them in the future. If you are interested in making a charitable donation to our SSRL SIG, follow these three steps:

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LETTER FROM THE CHAIRS

Abraham Flanigan & Divya Varier

Georgia Southern University & George Mason University



Abraham Flanigan



Divya Varier

With AERA 2024 rapidly approaching, we can't help but look back at the fun and productive year the SIG had. Our year was highlighted by our two online panel discussions. [The first discussion](#) was held in November and focused on shortcomings in how SRL theory and research attend to the needs and experiences of students from communities of color. [The second discussion](#) was held in February and focused on common obstacles to effective self-regulation of learning. Both of these discussions were incredibly well attended, and we're looking forward to the SIG hosting more of these panel discussions next year!

We would also like to congratulate the following individuals who will become the junior chairs on our SIG's executive committee at AERA 2024:

- Michelle Taub (Junior Chair)
- Alexandra Patzak (Junior Program Chair)
- Allyson Pitzel (Junior Secretary & Newsletter Chair)
- Melani Loney (Junior Treasurer & Membership Chair)

As always, we'd like to express our sincere gratitude and appreciation to Anna and Lauren for putting together such an informative and insightful edition of the SIG newsletter! Information about our SIG's AERA sessions, featured presentations and posters, and more are highlighted in the pages of this newsletter.

Thank you to all who make our SIG such an incredible and supportive community!

- Abe & Divya

LETTER FROM THE EDITORS

Anna Brady & Lauren Cabrera

Georgia Southern University & Michigan State University



Anna Brady



Lauren Cabrera

As we gear up for the 2024 AERA Annual Meeting in Philadelphia, we're thrilled to highlight the Studying and Self-Regulated Learning SIG sessions! In this newsletter, you'll find our conference schedule, along with a featured extended abstract from each session.

Presenters from around the world will be joining us at AERA, and the sessions will cover a variety of topics. Presentations will emphasize the role of self-regulated learning for a variety of age ranges (e.g., elementary-aged students and college students). In addition, presenters will discuss a range of methodological approaches and data sources (e.g., self-report surveys and trace data). Finally, as usual, we have a strong emphasis on presentations that emphasize methods to support students' engagement in self-regulated learning.

Please note that Dr. Revathy Kumar will be the keynote speaker at our business meeting on Sunday night. Dr. Kumar's talk will extend on the engaging webinar panel discussions the SIG has facilitated this year!

We are looking forward to seeing you in Philadelphia,

Anna & Lauren

SSRL SIG AERA Schedule

SATURDAY, APRIL 13TH

Assessing Self- and Motivational Regulation During Learning: The Impact of Context on Learning and Well-Being

7:45 – 9:15 am, Philadelphia Marriott
Downtown, Floor: Level 4, Room 406

<http://tinyurl.com/yqyrohzw>

Chair: Laura Fink, University of Passau

Academic Achievement, Self-Regulated Learning, and Self-Perception in

Elementary-Aged Children - Morgan A. Jernigan, Washington State University; Genna Kieper, Washington State University; Kira J. Carbonneau, Washington State University

Effectiveness of a Self-Administered Strategic Resource-Use Intervention During and Out of COVID-19 - Luke D. Rutten, University of Texas at Austin; Desmond C. Ong, University of Texas at Austin; Patricia Chen, University of Texas at Austin

Effects of Frequency, Situation-Specific Fit, and Application Quality of Motivational Regulation Strategies on Students' Well-Being - Sophie von der Muelbe, University of Augsburg; Raven Rinas, University of Augsburg; Markus Dresel, University of Augsburg; Kristina Stockinger, University of Augsburg

Revisit the Relationship Between English Learner Autonomy and School Type During the COVID-19 Lockdown - Shikun Li, Nanjing Normal University; Guofang Li, University of British Columbia; Yangting Wang, University of Texas - San Antonio

Discussant: Hefer Bembenutty, Queens College – CUNY

Measuring SRL Processes in STEM College Courses

1:15 – 2:45 pm, Philadelphia Marriott
Downtown, Floor: Level 4, Franklin 8

<http://tinyurl.com/ypw86hvq>

Chair: Cristina D. Zepeda, Vanderbilt University

Effects of Self-Regulated Learning on Community College Students' Metacognition, Motivation, and

Achievement in Geoscience Courses - Melani A. Loney, Old Dominion University; Linda Bol, Old Dominion University; Joanna K. Garner, Old Dominion University; Tony Perez, Old Dominion University

Measuring and Investigating Differences in Help-Seeking Among College Students - Stephanie Marlett, Old Dominion University; Linda Bol, Old Dominion University; Courtney Hill, University of North Carolina Charlotte; Erin Cousins, Old Dominion University

Modeling Temporal Self-Regulatory Processing in STEM Learning of Engineering Design - Juan Zheng, Lehigh University; Zilong Pan, Lehigh University; Shan Li, Lehigh University; Charles Xie, Institute for Future Intelligence

Promoting the Self-Regulated Use of Retrieval Practice and Elaboration in an Undergraduate Biology Course - Michelle Lauren Rivers, Texas Christian University; Uma Tauber, Texas Christian University; Mark McDaniel, Washington University in St. Louis

What Does a Digital Trace Mean? Validating Inferences in Learning Analytics - Matthew L. Bernacki, University of North Carolina - Chapel Hill; Linyu Yu, University of North Carolina - Chapel Hill; Shelbi Laura Kuhlmann, The University of Memphis; Robert D Plumley, University of North Carolina - Chapel Hill; Jeff A. Greene, University of North Carolina - Chapel Hill; Peter F. Halpin, University of North Carolina - Chapel Hill; Rebekah F. Duke, University of North Carolina - Chapel Hill; Rebekah Freed, University of North Carolina - Chapel Hill; Christina Hollander-Blackmon, University of North Carolina - Chapel Hill; Miranda D. Thomas, University of North Carolina - Chapel Hill

Discussant: Sharon Zumbrunn, Virginia Commonwealth University

SUNDAY, APRIL 14TH

The Past, Presence, and Future of Intelligent Pedagogical Agents - Gautam Biswas, Vanderbilt University

11:25 - 12:55pm, Philadelphia Marriott
Downtown, Floor: Level 4, Room 406

<http://tinyurl.com/ynjuysdv>

Chairs: Megan Wiedbusch, University of Central Florida; Roger Azevedo, University of Central Florida

The Past, Presence, and Future of Intelligent Pedagogical Agents - Gautam Biswas, Vanderbilt University

AI Partners to Support Group Collaboration in Classrooms - Leanne Hirshfield, University of Colorado – Boulder

Pedagogical Agents Research for AI-Augmented Narrative-Centered Learning - James C. Lester, North Carolina State University

A Modeling and Simulation Transdisciplinary Approach to the Design of Human Digital Twins for Learning - Megan Wiedbusch, University of Central Florida; Roger Azevedo, University of Central Florida; Sarah Romero, University of Central Florida; Crystal Maraj, University of Central Florida; Carolina Diana Cruz, University of Central Florida; Azhar Ali Mohammad, University of Central Florida; Abdul Mohammed, University of Central Florida; Jason Diana Ortiz, University of Central Florida; Grace Bochenek, University of Central Florida

Discussant: Richard E. Mayer, University of California - Santa Barbara

AERA24 Studying and Self-Regulated Learning SIG Poster Session

3:05 - 4:35pm, Pennsylvania Convention Center, Floor: Level 200, Exhibit Hall A

<https://tinyurl.com/yrweqr3w>

An Evaluation of the Importance of Forethought Processes for Engagement and Performance on Academic Tasks (Poster 24) - Anna C. Brady, Georgia Southern University; Christopher A. Wolters, The Ohio State University; Shirley L. Yu, The Ohio State University; Tzu-Jung Lin, The Ohio State University

A Strategic Mindset Predicts and Promotes Effective Learning and Performance (Poster 25) - Patricia Chen, University of Texas at Austin; Qiao Kang Teo, National University of Singapore; Delphinna Neo, National University of Singapore; Xing Yuan Foo, National University of Singapore; Lining Sun, National University of Singapore; Xiang Ling Ong, National University of Singapore; Yifan Jiang,

National University of Singapore; Xi Hui Chua, National University of Singapore; Niveditha Iyer, National University of Singapore; Carol Dweck, Stanford University; Desmond C. Ong, University of Texas at Austin

Cross-Cultural Adaptability of a Brief Self-Regulated Learning Intervention and Effects on Undergraduates' Learning and Achievement (Poster 26) - Shani Rosengarten, University of Haifa; Leiming Ding, University of North Carolina - Chapel Hill; Christina Hollander-Blackmon, University of North Carolina - Chapel Hill; Adar Ben-Eliyahu, University of Haifa; Matthew L. Bernacki, University of North Carolina - Chapel Hill

Enhancing Chinese University Students' SRL (Self-Regulated Learning) Writing Strategy Use Through a Strategy-Based Intervention (Poster 27) - Bin Shen, Fuzhou University; Barry Bai, Chinese University of Hong Kong; Wenjuan Guo, Shanghai Jiao Tong University; Jing Li, The Chinese University of Hong Kong; Qingyao Dan, The Chinese University of Hong Kong; Feng Xiong, National Institute of Education - Nanyang Technological University

Enhancing Self-Regulation and Motivation for Hispanic or Latina/o/e Transfer Students in Engineering Courses (Poster 28) - Michelle Taub, University of Central Florida; Sierra Outerbridge, University of Central Florida; Marino Nader, University of Central Florida; Sudeshna Pal, University of Central Florida; Ricardo Zaurin, University of Central Florida; Mohammadeza Chimehrad, University of Central Florida; Zhongzhou Chen, University of Central Florida; Melissa Dagley, University of Central Florida; Cyndia Muñiz, University of Central Florida; Harrison Ntabo Oonge, University of Central Florida; Shawn Putnam, University of Central Florida; Hyoung Jin Cho, University of Central Florida

Evaluation of a Learning Analytics Intervention to Support Self-Regulated Learning in Online Continuing Education (Poster 29) - Yvonne M. Hemmler, University of Mannheim; Dirk Ifenthaler, University of Mannheim; Julian Rasch, edyoucated

Exploring the Interplay of Affective Engagement, Emotions, and Eye Movement During Multiple-Text Comprehension (Poster 30) - Zheng Hong Guan, National Yang

Ming Chiao Tung University; San Ju Lin,
National Yang Ming Chiao Tung University

Fairness-Aware Behavioral Clustering for Self-Regulated Learning in Virtual Learning Environments (Poster 31) - Yukyeong Song, University of Florida; Chenglu Li, University of Utah; Wanli Xing, University of Florida; Hakeoung Hannah Lee, University of Texas at Austin; Shan Li, Lehigh University; Yingbo Ma, University of Florida

Pausing During Writing: Evidence of Metacognitive Monitoring and Control? (Poster 32) - Michelle Taub, University of Central Florida; Joel Schneier, University of Central Florida; Sierra Outerbridge, University of Central Florida; LaVonda R. Walker, University of Central Florida; Lindsey Olivera, University of Central Florida; Allison Macey Banzon, University of Central Florida; Marissa Salas, University of Central Florida

Profiles of First-Generation Students' Self-Regulated Learning Beliefs and Effects on Postsecondary Persistence and Degree Attainment (Poster 33) - D. Jake Follmer, West Virginia University; Megan Hut, West Virginia University; Robin Spitznogle, West Virginia University; Carlton J. Fong, Texas State University

Review of Learner Autonomy Scales: Mapping the Landscape of Measurement Tools in Autonomy Interventions (Poster 34) - Xue Wang, Johns Hopkins University; Hanhui Bao, University of Tennessee; Hanhui Bao, University of Tennessee; Marcia H. Davis, Johns Hopkins University

Taking Adaptive Learning in the Educational Setting to the Next Level: Leveraging Natural Language Processing for Improved Personalization (Poster 35) - Mathias Mejeh, Zurich University of Teacher Education; Martin Rehm, University of Regensburg

Teachers' Perceptions of Self-Regulated Learning, Its Efficacy and Application to Instructional Practices (Poster 36) - Stephanie Marlett, Old Dominion University; Linda Bol, Old Dominion University; Courtney Hill, University of North Carolina Charlotte; Erin Cousins, Old Dominion University

Understanding the Role of Cue Use and Judgment Type on Metacomprehension

Accuracy (Poster 37) - Allison J. Jaeger, Mississippi State University; Berna Altunisik, Mississippi State University; Logan Fiorella, University of Georgia

Studying and Self-regulated Learning Business Meeting

4:55 - 6:25pm, Pennsylvania Convention Center, Floor: Level 100, Room 113C

<http://tinyurl.com/ypg37z48>

Keynote Address: Cultivating Open-mindedness, Intellectual Humility, and Cultural Humility: Regulating Biased Beliefs, Attitudes, and Behaviors - Revathy Kumar, The University of Toledo

Featured Presentations and Posters

ACADEMIC ACHIEVEMENT, SELF-REGULATED LEARNING, AND SELF-PERCEPTION IN ELEMENTARY-AGED CHILDREN

Morgan A. Jernigan, Washington State University; Genna Kieper, Washington State University; Kira J. Carbonneau, Washington State University

Session Name: Assessing Self- and Motivational Regulation During Learning: The Impact of Context on Learning and Well-Being



Morgan A. Jernigan

The 2019 National Assessment of Educational Progress (NAEP) presented findings indicating that the national mathematics and reading achievement on average have decreased compared to 2017. In an attempt to explain this negative decline, research has begun to examine systematic patterns related to students' affective characteristics. Academic self-regulation has been highlighted as a factor of importance in student success (McClelland & Wanless, 2012). In particular, research has supported that early mathematics and reading achievement have been associated with later academic performance (Jordan et al., 2009; Lesnick et al., 2010), and is associated with high academic self-regulation (McClelland & Wanless, 2012). Students' ability to effectively employ academic self-regulatory behavior is key in providing students with future academic success and many schools have employed early interventions focusing on improving those key skills to aid students in becoming successful students. However, a



Genna Kieper

nuanced understanding of how academic self-regulation impacts academic achievement and the importance of academic achievement and the importance of early academic achievement in later education, is still needed. Therefore, the present study sought to explore the relationship between academic self-regulation and academic achievement and determine if both individual and classroom level perceptions of self-regulation impact student achievement. Data collected from 538 third- ($n=265$) and fourth-grade students ($n=273$) regarding their academic self-regulation and mathematics and reading achievement scores were used. Multilevel-modeling was used to examine the effects of student-level and classroom-level variables on reading and math achievement. Consistent with previous research, the present results show that individual, student self-regulated learning significantly predicted mathematics and reading achievement, while classroom-level self-regulated learning did not. A possible explanation as to why no significant connection was found between classroom level self-regulated learning and achievement is that possibly using the aggregated individual student level self-regulated learning scores did not result in the most representative measure of classroom level self-regulated learning regardless of previous support. Therefore, future research is warranted to further investigate whether



Kira J. Carbonneau

other measures of self-regulated learning at the classroom level might better address our question by surveying teachers directly on their practices. Additionally, possibly looking at actual interventions targeted at improving self-regulated learning within a classroom could improve how we evaluate its impact on academic achievement for students. Sex differences in how students individually perceived self-regulated learning and their reading achievement scores were also found. However, further research is needed to evaluate the possible sex differences in how self-regulated learning predicts achievement, and if different self-regulated learning interventions are needed to address the mechanisms behind this potential difference.

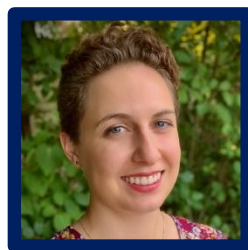
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PROMOTING THE SELF-REGULATED USE OF ELABORATION AND RETRIEVAL PRACTICE IN AN UNDERGRADUATE BIOLOGY COURSE

Michelle Rivers, Texas Christian University; Uma Tauber, Texas Christian University; Mark McDaniel, Washington University in St. Louis

Session Name: Measuring SRL Processes in STEM College Courses



Michelle Rivers

Objectives: Many students who enter college struggle to adopt strategies that promote lasting learning, leading them to earn low or non-passing grades in challenging “gateway” science courses. Thus, there is a clear need for training programs that can help undergraduate students develop and maintain learning strategies that are effective across a range of science content.

Theoretical Framework: McDaniel and Einstein (2020) proposed a theoretical framework for promoting the use of effective learning strategies through training. Informed by models of self-regulated learning, they argue that the four critical components for strategy training are (1) knowledge about the strategies and how to use them, (2) belief that the strategies are effective, (3) commitment to implementing the strategies, and (4) a formulated plan for



Uma Tauber

implementation of the strategies during learning. We experimentally evaluated this framework in an undergraduate biology course. Specifically, we asked: Does a training intervention informed by the Knowledge, Belief, Commitment, and Planning framework lead to greater use of effective learning strategies compared to a control group?



Mark McDaniel

We focused on two highly effective strategies: retrieval practice (i.e., recalling information from memory) and elaboration (i.e., generating meaningful explanations, examples, and connections between concepts). These strategies are effective for learning across a broad range of outcomes (e.g., memory, comprehension, application), have demonstrated effectiveness in undergraduate science courses, can be easily implemented by students, and are generally underutilized.

Methods: Undergraduates (N = 40) in a large (400+ student), 16-week Introductory Biology course at Texas Christian University were randomly assigned to receive the strategy-training intervention or to a healthy habits control group. In the strategy-training intervention, students participated in dynamic instruction about how and why they should implement effective learning strategies, experienced a demonstration of the consequences of using (vs. not using) such strategies, underwent a utility-value intervention (i.e., reflected on how using effective strategies would benefit them), and practiced making a study plan and implementation intention (i.e., thinking through when, where, and how they would use effective strategies). In the healthy habits control, students listened to a lecture about the

importance of maintaining their health, reflected on their current health habits, and made a plan for incorporating healthier habits. Across the semester, students reported their strategy beliefs, completed surveys assessing their self-regulated learning behavior, and completed five course exams.

Results and Conclusions: Strategy beliefs, learning behavior, and exam performance did not significantly differ between students who received the strategy-training intervention and students who received a healthy habit intervention. One important limitation of our experiment is that only a small proportion of students in the course self-selected to participate. Participating students already had accurate strategy beliefs and performed well on course exams at the beginning of the semester, so they may not have benefitted from the intervention as much as other students – particularly lower-performing students – in the course. Our outcomes provide a multifaceted depiction of students' strategy use across a semester, which can inform further iterations of strategy-training interventions. Future research should continue to identify factors that hinder and facilitate strategy change for students.

Reference:

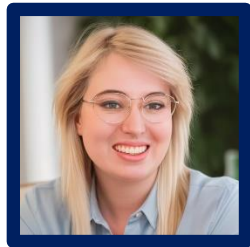
McDaniel, M. A., & Einstein, G. O. (2020). Training learning strategies to promote self-regulation and transfer: The knowledge, belief, commitment, and planning framework. *Perspectives on Psychological Science*. <https://doi.org/10.1177/1745691620920723>

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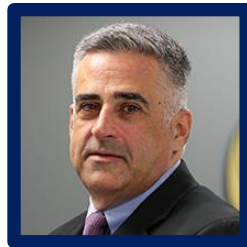
THE PAST, PRESENT, AND FUTURE OF INTELLIGENT PEDAGOGICAL AGENTS: FROM AVATARS TO HUMAN DIGITAL TWINS

Co-Chairs: Megan Wiedbusch and Roger Azevedo, University of Central Florida

Symposium Session



Megan Wiedbusch



Roger Azevedo

Technological advances have enabled educational researchers to create increasingly human-like agents. Several meta-analysis and systematic reviews (Dai et al., 2022; Castro-Alonso et al., 2021; Davis, 2018; Schroeder et al., 2013; Sikström et al., 2022) and decades of research investigating pedagogical agents (PAs) have been conducted to examine what may contribute to their effectiveness as scaffolds within digital learning environments. However, many of these studies have targeted the evaluation of PA visual design (e.g., agent appearance, animation), leaving remaining questions about the theoretical implications about how, when, why, and what type of support PAs should be providing. That is, how do characteristics including (1) learning technology, (2) agent functionality, (3) agent roles, (4) learner demographics, and (5) pedagogical approaches each contribute to learning both as an outcome and as a process? As such, this symposium features four presentations around several types of pedagogical agents (intelligent tutors, chatbots, embodied social agents, collaborative agents, avatars) that help support and scaffold learners' cognitive, motivational, metacognitive, and affective processes. We conclude with an exploration of pedagogical agents that are digital replicas of learners, or Human Digital Twins (HDTs) of ourselves. We examine how the current methodological and design approaches to the cutting edge of PAs have built upon the learned lessons of the past, utilize the most contemporary machine learning

approaches of the present, and theorize what is in store for the future of PAs.

This symposium features four presentations that examine PAs within a variety of learning contexts including open-ended learning environments (Paper 1 presented by Gautam Biswas, Vanderbilt University), team-based jigsaw activities (Paper 2 presented by Leanne Hirshfield, University of Colorado, Boulder), narrative-centered learning environments (Paper 3 presented by James Lester, North Carolina State University), and simulations (Paper 4 presented by Megan Wiedbusch, University of Central Florida). Across all 4 presentations, authors examine and discuss the complex challenges of embedding and situating PAs within these specific contexts that are more open and pedagogically demanding than traditional well-defined educational technologies of the past (i.e., intelligent tutoring systems). Additionally, in all four presentations, authors underscore the importance of natural language processing as the driving AI for communication and collaboration between learners and PAs. We will conclude the session with a presentation on pedagogical agents of the future that are digital replicas of learners, or Human Digital Twins (HDTs) of ourselves.

PAs as scaffolds continue to be a promising medium for enhancing and transforming more conventional learning experiences. There are, however, still many unresolved questions regarding the design implications of these agents as we begin to incorporate increasingly complex artificial intelligence into their development. Ultimately, PAs ought to facilitate not only

meaningful understanding of content knowledge, but also transferable self-regulatory skills. This symposium will provide a platform to discuss the direction for the future iterative design of their agents and the design of the next generation of PAs in the form of HDTs. Adopting principle-aligned design for these agents is imperative to the development of the classrooms of the future.

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EVALUATION OF A LEARNING ANALYTICS INTERVENTION TO SUPPORT SELF-REGULATED LEARNING IN ONLINE CONTINUING EDUCATION

Yvonne M. Hemmler, University of Mannheim; Dirk Ifenthaler, University of Mannheim; Julian Rasch, edyoucated

Session Name: AERA24 Studying and Self-Regulated Learning SIG Poster Session



Yvonne M. Hemmler

Introduction

In the past decade, online continuing education (OCE) opportunities (e.g., corporate e-learning, Massive Open Online Courses) have attracted a large number of learners (Ifenthaler, 2018). Self-regulated learning (SRL) has been considered a key competence for OCE. However, many learners struggle to successfully engage in SRL, leading to dropouts or poor learning performance (Kizilcec & Halawa, 2015). While recent research has recognized the potential of learning analytics and adaptive learning to support SRL in higher education (Viberg et al., 2020), research focusing on learning analytics and adaptive learning to support SRL in OCE is

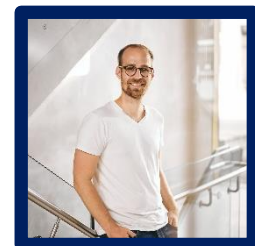
scarce. The aim of this study is to evaluate the effectiveness of an adaptive learning analytics intervention to support SRL on the edyoucated-platform (a learning platform for OCE, <https://edyoucated.org/>). The intervention aims to support learners' time management, metacognition, and effort regulation by encouraging them to set an overall learning goal consisting of a learning path and a deadline by which they want to have completed the learning path. Based on the overall learning goal, a personalized learning plan is created that breaks down the overall learning goal into weekly goals consisting of a time commitment in minutes the learner has to invest each week to finish the learning path by the deadline. The weekly goals are adjusted continuously based on individual learning behavior, and learners can monitor their progress on a dashboard.



Dirk Ifenthaler

Method

We conducted an experiment with a mixed factorial design. Participants ($N = 76$) were randomly assigned to one of two groups: the intervention group where the adaptive learning analytics intervention to support SRL was activated or the control group where the intervention was not activated. Participants could choose one of three learning paths (data reporting, agile management, or leadership) and were given 12-weeks to complete their chosen learning path. Participants were asked to complete questionnaires (including demographics, participants' knowledge on



Julian Rasch

learning contents, as well as perceived learning support, satisfaction, and SRL scales) at the beginning and the end of their learning period.

Results

The intervention was positively evaluated in terms of perceived learning support. The intervention positively affected participants' time management ($p < .001$) and satisfaction with the learning process ($p = .038$). However, the feature did not significantly affect participants' metacognition, effort regulation, and knowledge scores.

Discussion

Our study provides empirical evidence for learning analytics interventions to support SRL in OCE. Our findings suggest that learning analytics interventions that encourage learners to set an overall learning goal and provide personalized recommendations of weekly learning time commitments can help learners manage their learning time efficiently and enhance learner satisfaction. However, the intervention might need to be supplemented with components encouraging motivation and self-reflection to further support SRL and learning performance in OCE. Due to the small number of participants, our study is subject to low statistical power. The study is still ongoing and we are currently collecting more data to enhance the number of participants.

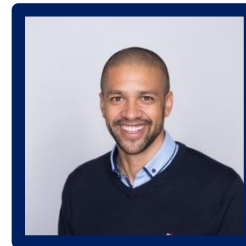
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TAKING ADAPTIVE LEARNING IN EDUCATIONAL SETTINGS TO THE NEXT LEVEL: LEVERAGING NATURAL LANGUAGE PROCESSING FOR IMPROVED PERSONALIZATION

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Session Name: AERA24 Studying and Self-Regulated Learning SIG Poster Session



Mathias Meje

Self-regulated learning (SRL) processes are essential for lifelong learning and are widely regarded as the cornerstone of education in the 21st century. Fueled by the digitalization of educational systems, SRL is increasingly supported by digital media, such as learning management systems, or apps (Broadbent & Poon, 2015). From an educational science perspective, the primary goal is to support the learning and educational process of learners, ideally tailored to their learning process (Azevedo & Gašević, 2019). This type of technology is also referred to as Adaptive Learning Technology (ALT). While the use of ALT has gained increasing recognition, both academically and in practice, questions still exist about the technical and pedagogical requirements of ALTs. Moreover, a growing interest has developed around applications using natural language processing (NLP) and AI-generated text to support SRL within the context of ALT. We therefore ask ourselves

"What is the potential of integrating NLP within an ALT to improve real-time contextual support for learners' SRL?"

Our research is grounded in a Swiss project that collaborates with high schools in the development, testing, and adaptation of a tailored digital tool, aiming to offer adaptive and personalized SRL support for students and teachers. Here, we collected 210 minutes of recorded student interviews ($N = 6$) from two different 11th grade classes. The transcribed interviews were analyzed using a three-tier approach, consisting of i) opinion mining, ii) part-of-speech tagging (POS), and iii) sentiment analysis. Opinion mining identifies subjective information using computational linguistics, creating lexicons based on



Martin Rehm

responses to interview questions. Reference lexicons, rooted in cognitive, motivational, and emotional components for SRL, were compared using cosine similarity. POS categorized responses, extracting keywords and phrases. Sentiment analysis, focusing on positive and negative emotions, was employed to aid our understanding of affective SRL processes.

The preliminary results of our work reveal diverse levels of SRL proficiency among interviewees. It seems that the SRL constructs “Emotion” and “Motivation” are slightly more pronounced than the other ones. This demonstrates that by using similarity measures, an initial rough assessment of individual SRL-related needs can be conducted. Moreover, POS provides additional insights into how students might consider and use SRL in their daily lives. This, in turn, enables the provision of more fine-tuned and adaptive feedback and suggestions that take into account the individual context in which students engage with SRL. This approach offers an alternative to relying solely on self-reports (Winne & Perry, 2000) or traditional learning analytics data like trace data.

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CULTIVATING OPEN-MINDEDNESS, INTELLECTUAL HUMILITY, AND CULTURAL HUMILITY: REGULATING BIASED BELIEFS, ATTITUDES, AND BEHAVIORS

Revathy Kumar, The University of Toledo

Presented during SSRL SIG Business Meeting



Revathy Kumar

In a diverse society such as the U.S., cultural and societal biases and prejudices associated with members of different and distinct social groups become embedded in our collective memory and, consciously or unconsciously, inform our everyday behaviors in very tangible ways. We often see it play out in educational institutions, disproportionately disadvantaging the learning experiences and well-being of minoritized students. Efforts to address this issue with interventions such as implicit bias training to raise cultural awareness among teachers and administrators have met with indifferent success. Alternately, cultivating the virtues of open-mindedness, intellectual humility, and cultural humility holds the potential for promoting equity and social justice in the teaching-learning context. Together, these intellectual and moral virtues will enable one to develop a nonthreatening awareness of one’s intellectual fallibility, enhance one’s self-other cultural awareness, and motivation to be unbiased. Concurrently, developing these virtues will promote acknowledgment of the legitimacy of differing worldviews and foster appreciation for diverse ways of thinking and being. In essence, cultivating the tripartite virtues of open-mindedness, intellectual humility, and cultural humility will empower administrators, teachers, and students to monitor and regulate their beliefs, attitudes, and behaviors toward others in the learning community and promote an educational environment characterized by empathy and understanding.

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