Washington State University

College of Education
Oluwafemi Sunday

Will defend the dissertation on

Date: April 5, 2024
Time: 2:00 P.M.

Pullman Campus – Cleveland Hall 353

Faculty, students and the general public are encouraged to attend

OPTIMIZING THE EFFICACY OF CONCEPT MAP FEEDBACK ON LEARNERS' COGNITIVE PROCESSES AND MOTIVATION

Chair: Olusola Adesope

This study combines two well-researched instructional strategies: concept mapping and feedback. Research evidence has shown that combining concept maps with another evidence-based instructional strategy could yield synergistic effects, which are effective for facilitating the acquisition and retention of knowledge. Despite the comparative advantages of these two instructional strategies, research still lacks theoretical explanations underpinning the differential and interaction effects of feedback timing and concept mapping. Additionally, research investigating the role of feedback timing has primarily focused on how feedback engenders learning outcomes via retention scores. Hence, little is known about how feedback timing induces learners' cognitive processes and motivation during learning with concept mapping. The limited understanding of how feedback timing and concept mapping intricately affect learning environments poses a significant challenge. Study 1 aimed to bridge the gap in existing research by exploring the nuanced roles of concept map feedback timing, motivation, and the quality of concept maps on learning outcomes, specifically focusing on retention and knowledge transfer. Results reveal that while feedback timing does not significantly affect retention, it plays a crucial role in knowledge transfer. This study contributes to feedback research and cognitive learning theories by emphasizing the nuanced role of feedback timing and motivational factors in learning processes. Study 2 examined how concept map feedback influences learners' cognitive processes using objective and subjective measures. Specifically, study 2 investigates the effects of feedback timing (immediate versus delayed) and prior concept mapping experience (no versus yes) on eye-tracking metrics, including fixation duration, total saccades, and self-reported cognitive load rating scale. Eye-tracking data revealed a significant main effect of prior concept mapping experience on fixation duration and total saccades, suggesting that experienced mappers engaged more intensively with the material. However, no significant main effect was found for feedback timing, nor was there a significant interaction effect between feedback timing and prior concept mapping experience on either eye-tracking measures or self-reported cognitive load. Theoretical, empirical, and practical implications are discussed in each study.

Keywords: Concept Maps, Feedback Timing, Eye Tracking, Fixation Duration, Total Saccades, Cognitive Load