

# Washington State University

## College of Education

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Will defend the dissertation on

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Pullman Campus – Cleveland Hall 353

Zoom available upon request to [gradstudies@wsu.edu](mailto:gradstudies@wsu.edu)

*Faculty, students and the general public are encouraged to attend*

## THE INTERACTIONAL EFFECTS OF PRETRAINING AND SIGNALING ON STUDENT LEARNING

Chair: Olusola Adesope

In multimedia learning, the efficacy of instructional strategies such as pretraining and signaling in scientific explanation remains a pivotal area of inquiry. Utilizing a 2 x 3 factorial design, this study investigated the complex interactions between pretraining and signaling and their subsequent effects on several learning outcomes. Independent variables were classified into two levels of pretraining: 'no pretraining' and 'pretraining', and three levels of signaling type: 'no signaling', 'weak signaling', and 'strong signaling', with participants (n = 193) randomly assigned to one of six conditions. The dependent variables were multiple-choice scores, retention scores, open-ended response scores, cognitive load, and motivation. Results from the univariate test highlighted a significant influence of pretraining on retention scores. However, other dependent measures failed to show significant associations with the independent variables. Descriptive analysis further revealed the nuances in these interactions, underscoring the multifaceted impact of pretraining and signaling in multimedia learning. Theoretical, empirical, and practical implications of the findings are examined, and directions for future research are discussed.

*Keywords:* Multimedia learning, pretraining, signaling, cognitive load, motivation