Title: Text versus verbal real-time feedback during simulation-based training of higher order cognitive skills

A crucial component of instructional design for simulation-based training systems involves optimizing the presentation of complex material in order to maximize knowledge acquisition and application. However, there are few established guidelines in place which are meant specifically for real-time guidance strategies within simulation-based environments. Consequently, this study aims to apply findings from research on the effects of instructional information presentation on cognitive load to drive decisions for how to provide real-time feedback presented during the instruction of simulated military cognitive tasks.

The current study compares textual versus verbal real-time feedback presentation during learning of higher-level cognitive skills in a virtual environment. Participants were instructed on how to perform a simulated decision making task, while receiving text, verbal, or no instructional feedback in real-time, based on their performance. Participants then completed an assessment scenario in which no feedback was provided. It was hypothesized that a linear relationship would exist across each of the three conditions, with those receiving verbal feedback during training performing highest on knowledge acquisition and application measures, followed by those receiving textual feedback, and then by the control group. Additionally, the opposite linear trend was expected regarding the amount of cognitive load reported during training and assessment, with participants in the verbal feedback condition expected to experience the lowest cognitive load. Results revealed several significant linear trends across conditions regarding decision making performance, indicating that verbal real-time feedback is more effective than text for learning higher-order cognitive skills.

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Approved for distribution by Dr. Randall Shumaker, Committee Chair, on October 22, 2010.

The public is welcome to attend.