Abstract ID: 16088

Title: Designing Effective Feedback in Adaptive Training Systems

Subcommittee: Training

Abstract Text: The Department of the Navy is interested in Adaptive Training (AT) methods to improve the effectiveness and efficiency of training in the workforce. AT is defined as instruction that is tailored to an individual learner's strengths and weaknesses either before or during training (Kelley, 1969; Park & Lee, 1996; Shinn & Zapata-Rivera, 2008). Although AT can be implemented in a variety of ways, one method that has shown promise is tailoring the feedback trainees receive during training (Bell, Kanar, Liu, Fertman, & Singh, 2008; Landsberg, Mercado, Van Buskirk, Lindeberry, & Steinhauer, 2012). However, there are many parameters of feedback delivery that can be adapted (e.g., timing, content, modality), and there is little guidance in the literature to suggest which method is best under which contexts. A between-groups experiment was conducted to examine three variables related to feedback presentation within an AT system: feedback timing (participants either received immediate or delayed feedback), feedback granularity (based on either one event or a summary of events), and environmental feedback (participants either received visual feedback of their performance or they did not). Seventy-five participants completed scenarios in the Periscope Operator Adaptive Trainer, in which they viewed contacts via a simulated periscope, made an Angle-on-the-Box (AOB) call, and received feedback about their performance based on their experimental condition. Performance was measured as the difference between the AOB participants called and the true AOB as well as the time latency for submitting their call. Preliminary data analysis shows an interaction between the feedback timing and the presence of environmental feedback. Participants receiving immediate feedback performed better with environmental feedback, while participants receiving delayed feedback performed better without environmental feedback. Theoretical implications for Cognitive Load Theory (Sweller, 1988) and practical implications for the design of feedback in adaptive training systems will be discussed.

Will this paper have one or more authors from outside the U.S.? No

Discussion Points:

1. Adaptive training
2. Feedback
3. Scenario-based training

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Biography: Carla R. Landsberg is a Research Psychologist at the Naval Air Warfare Center Training Systems Division in Orlando, Florida. She earned an M.A. and Ph.D. in Applied Experimental Human Factors Psychology from the University of Central Florida. Currently, her work includes researching innovative training methods and instructional strategies to improve training effectiveness for the warfighter and creating empirically validated adaptive training technologies.

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Biography: Cheryl L. Johnson is a Senior Research Psychologist at the Naval Air Warfare Center Training Systems Division in Orlando, FL, performing research on emerging training technology and adaptive training systems. She earned her Ph.D. and M.A. in Psychology from the University of California Santa Barbara and specialized in Cognition, Perception, and Cognitive Neuroscience. Dr. Johnson has over 10 years of experience in technology-based training research. Her research interests include adaptive training, instructional strategies, design principles for game-based training, and multimodal learning.

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Status: APPROVED
**IITSEC ABSTRACT SCORING FORM**

**Abstract ID Ref:** 16988  
**Title:** Designing Effective Feedback in Adaptive Training Systems  
**Primary Author:** Landsberg / Johnson  
**Committee:** Training

**Training:** The application of technologies and integration of systems into training system solutions.

The subcommittee is seeking papers that discuss the application of innovative concepts, methods and technologies to create effective training solutions. Papers should present a design framework based on literature, analysis of current solutions and training needs, and practical application. Popular topic areas include training strategies, integration techniques, interoperability, individual and collective team training, crew coordination, and legacy system upgrades. Evaluations of training effectiveness and lessons learned, documented with quantifiable data, are also encouraged. Emerging areas of interest include medical simulation-based training, game-based learning, and mobile and virtual training. The subcommittee is interested in all phases of training system design and development including analysis, planning, design, development, deployment, evaluation and life cycle support.

**Evaluation**

Substance: The compelling idea and the support for it. The total concept the author wants to present. A good idea can survive mechanical flaws, but perfect spelling and grammar can't save poor ideas.

Originality: A new concept that furthers the evolution of the committee's subject area. A repeat of past theories that add nothing to the community of knowledge are generally unacceptable, unless the prospective abstract/paper promises to impart knowledge that may be of substantive value to a novice audience.

**Acceptance**  
- Accept  
- Reject  
- Discuss  
- Sales Pitch  
- Similar Abstract  
- International Abstract  
- Transfer to another conference  

**Key Words or Concepts**

**Other Comments/Remarks**