Information security has become a major challenge for all private and public organizations. The protecting of proprietary and secret data and the proper awareness of what is entailed in protecting this data is necessary in all organizations. This treatise examines how simulation and training would influence information security awareness over time in virtual communities of practice under a variety of security threats. The hypothesis of the study was that security-trained members of a virtual community of practice would respond significantly better to routine security processes and attempts to breach security or violate the security policy of their organization or their virtual community of practice.

Deterrence theory was used as the grounded theory and integrated in the simulated information security awareness training. The study provided training with simulated events and then tested the users of a virtual community of practice over an approximately twelve-week period to see if the planned security awareness training and further testing would be effective in improving their responses to the training simulations.

The research subjects were divided into four groups, a research group and three control groups. The research group received all of the training and testing events throughout the twelve-week period. The three control groups received various portions of the training and testing. The data from all of the testing and simulated events were analyzed using the Kruskal-Wallis ranked order test, and it was determined that there was no significant difference between the groups at the end of the data collection.

Even though the null hypothesis was not rejected, the groups that received the initial simulated training did perform slightly better on a post-training test when compared with the control group that did not receive the training. More research is suggested to determine how simulated information security awareness training and testing can be used to improve and sustain the security practices of members of virtual communities of practice. Specifically, this suggested research could include: the potential benefits of using adaptive and intelligent training to focus on the individual subjects’ weaknesses and strengths; the length of the simulated training events, the time between each training event, and the overall length of the training; the demographics of the groups used in the training, and how different user characteristics impact the efficacy of the simulated training and testing; and lastly examining how increasing the fidelity of the simulations impact the results of the follow-up tests.

Major: Modeling and Simulation

Educational Career:
Bachelor's of Business Administration / MIS, BS, 1985, California State University, Hayward
Master's of Management Information Systems, MS, 1991, University of North Carolina

Committee in Charge:
Charles Reilly, Chair, IEMS
Peter Kincaid, IST/Modeling & Simulation
Christopher Geiger, IEMS
Carol Saunders, Management Information Systems
Lawrence West, Management Information Systems

Approved for distribution by Charles Reilly, Committee Chair, on November 22, 2010.
The public is welcome to attend.