A High Fidelity e-Learning Model in Information Security

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Introduction

- IST 402-Web & E-Commerce Security; IST 451-Network Security
  - Very technical and based on a broad range of technologies
  - Hands-on
  - Quintessential for the SRA program

- **Delivery Model:** Asynchronous online (2-3 week rolling-window)

- **Why:** Deliver hands-on education and training to students anywhere, anytime, at their pace.
High Fidelity E-Learning Model

- “preserve the quality of the educational experience while minimizing or eliminating the need to be in a specific place at a specific time with a live instructor.”
- **CMU Software Engineering Institute**

ISM 402 (online): Web & E-Commerce Security

- **INFOSEC @ BERKS**
- **1.2 Traditional Ciphers**
  - Traditional ciphers operate on plaintext message. While true both letters are used to encrypt
  - plaintext messages. Substitution ciphers are encryption in which each character of a plaintext message is replaced by another character. An example for a substitution cipher is shown in Figure 1. Note that in this example, letter O is always replaced with letter P regardless when letter O appears in the message. The Caesar cipher is an example of a letter substitution cipher. In poly-alphabetic substitution, a character may be replaced with different letters depending on its position in the word or the message text. In transposition, one provides on one with the encrypted message an additional uncertainty.
The Collaborative Virtual Computer Laboratory (CVCLAB)

- The CVCLAB aims to provide students with an open learning environment in which they can experiment with complex and high risk operations without any concern.

Group Work in the CVCLAB

- The CVCLAB aims to provide students with an open learning environment in which they can experiment with complex and high risk operations without any concern.
Group Work to Engage Online Students

- Students attempt to create a product of their learning by being engaged in a common activity in the CVCLAB.
- Students depend on one another for a successful completion of the activity.

What Works?

- **Multimodality** (Text, Animations, Video, Picture, etc.)
  - Keep the animations short (<5 min)
  - Text is important (students read them!)
  - Use a casual, conversational style
- **Short modules and**
- **Frequent short activities**
- **Comment boxes and online forums**
What About Group Work?

Overall, how much did hands-on activities in CVCLAB contribute to your learning in this course?

During the semester, you have completed several team activities. Do you think that IST 451 should include more team activities?

Team activities were more engaging...

I learned better in team activities...
Student Comments

- What did you like most about online IST 451?
  - “That there was assignments almost every week and give enough time to do the work. Again I like the videos they were a great help”
  - “CVCLAB, Allowed for assignments to be done anywhere, anytime”
  - “good variety of information, loved the online discussion forum!”

- What did you like least about online IST 451?
  - “lack of interaction and being able to discuss ideas as they arise”

Conclusions

- Students learned a lot, but we need ....
- Better ways to promote group work in online learning
- More interactions