Puzzle Based Learning for Cyber-Security Problems
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Cyber World: Security Threats
- Worm, Viruses
- Adware, Malware
- DOS/DDOS Attacks
- Botnet, Spam
- Identity Theft

Targeted Attacks
- Source: Norton Report 2012

Causes of Breaches
- Accidentally made public: 23%
- Theft or loss of computer or drive: 23%
- Insider theft: 6%
- Unknown: 1%
- Fraud: 40%

Targeted Attacks
- Source: Norton Report 2012

Puzzle Based Learning
- Steps
  - Introduction of the topic through communicating lectures
  - Interactive Story with problems
  - Story can be lead to different directions in accordance to feedback to the problems
- Learning
  - Participants interactively communicate with the story and also the problem
  - Challenges stimulate participants to use their reasoning and knowledge learned from classes
  - Participants become aware of the consequences of their responses as the responses leads the story ahead

Why Puzzles?
- Identifying the Question
- Dealing with Uncertainty
- Reasoning with Domain-specific Methods
- Identifying the Question
- Dealing with Uncertainty
- Reasoning with Domain-specific Methods

Why Puzzles?
- A new way of learning
- Better productivity than traditional learning - About 500% (Ref: Michalewicz Z, Michalewicz M, Puzzle Based learning)
- Increase critical thinking skills and participation

Implementation
- Some scenarios are implemented using Articulate Storyline.

Guidance and Feedback
- Scenario with a story guides the user step by step.
- Users are provided with feedback based on their action.

Conclusion & Future Works
- Provokes the thinking process by providing challenges.
- Interactive process to engage participants in the story or the problem.
- Participants see the future consequences of their actions, makes the learning process interesting.
- Full course design using this method is underway.