PREREQUISITE TESTING OF CYBERSECURITY SKILLS

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WHAT IS IT ABOUT?

Cybersecurity games
An attractive method of practical, active learning.

Problem: Achieving game balance
The games are too difficult for beginners.

Approach: Prerequisite testing
Test players before the game to determine their skills and assist them based on the test results.

WHY IS IT IMPORTANT?

Benefits of educational games
Authentic practice, prizes, and motivating experience.

Learners need individual help
More precise instructions, hints, or study materials.

Unexplored research area
Vast potential for new contributions.

WHAT DID WE DO?

1. Skill measurement
The learners completed a prerequisite quiz and a self-assessment of their expertise.

2. Gameplay
The learners played a game in the KYPO - Cyber Exercise & Research Platform.

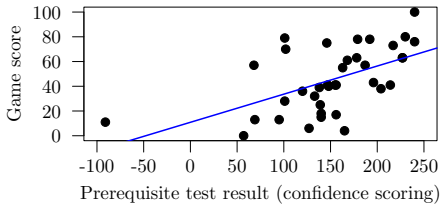
3. Statistical modeling
We applied linear regression to model players' game performance based on the skill measurement.

WHAT WERE THE RESULTS?

A well-designed knowledge quiz accurately predicted game score and levels completed.

Significant improvement when learners shared how certain they are in their answers.

Self-assessment was inaccurate: it is difficult to create items with high informative value.



Thesis archive

KYPO project

CONTRIBUTIONS

Thorough review of literature and state-of-the-art security platforms.

General method for creating pretests.

Experimental study applying the method in practice and evaluating it.

PRACTICAL IMPACT

Method usable in any educational game.

Motivated the development of a visualizer for generic game events.

Led to creating a topic for the author's Ph.D. study.

WHAT NEXT?

Submitted a paper on an A-level conference ACM SIGCSE.

Providing hints and other help adaptively.

Ultimate goal: more effective learning.