

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.

WHAT DID WE DO?

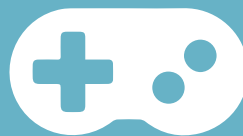
1. Skill measurement

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.



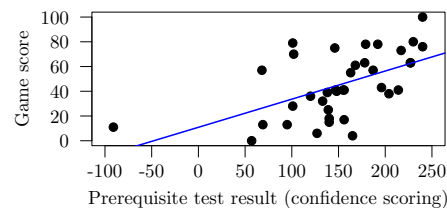
WHAT WERE THE RESULTS?



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.

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 NEXT?



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

Providing hints and other help adaptively.

Ultimate goal: more effective learning.