This is Not a Game

Early Observations on Using Alternate Reality Games for Teaching Security Concepts to First-Year Undergraduates

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security education

few students pursuing CS in high school or college
many leave the discipline after the first year
don’t pursue security
and, aren’t very diverse

67/1275 (5%) of CS PhDs pursued security
but, why?
causes are generally unknown
shortcomings in first-year experience:
lacks real world context
reinforced perceptions
limitations on creativity

67/1275 (5%) of CS PhDs pursued security
rethinking CS1

many universities reinventing first-year experience at Cal Poly:

constructivist, open-ended assignments offered in a variety of “flavors”

now, in a security flavor as an alternate reality game
why ARGs?

alternate reality games in the classroom, can:

- be social and inclusive
- stimulate counterfactual thinking
- maintain engagement
- provide an authentic context for material
our goals

(i) increase engagement
(ii) boost confidence
(iii) improve awareness
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ZNJP's PASSWORD VAULT

This is my super secure password storage center.

I was tired of insecure systems that had only ONE password protecting ALL the passwords.

In my system, you must get through all the base authentications to even GET to the per-password security. Each password is secured by a different password, but you can make it less secure than normal because it's so hard to get in.

Enter Access Code Below:

1 2 3
4 5 6
7 8 9
0
ZNJP's PASSWORD VAULT

Enter Access Code Below:

1 2 3

Access Level One Confirmed

Confirmation Key = one_digit_is_super_secure

0
LEVEL THREE AUTHORIZATION

Password: ********
Submit

https://cpe123.csc.calpoly.edu/challenge/level3?code=guess
LEVEL FIVE AUTHORIZATION

Access Denied, Please Try Again Maintenance mode over, password bug fixed.

SHA-1 HASHES DO NOT MATCH
'943f264d7534aad8d4f5fdda2ed7e16d088f56de' != '77361fca965b3e53ff81a5d48525ca8adb8a9b87'

Password:        
Submit
assessment evaluated using: reflective journals, modified computer attitude scale survey, student interviews
early results

game play: “cloak & dagger” aspects diminished frustration, increased engagement

group dynamics: experienced students led near-peer instruction, adoption of roles

behaviors & perceptions: actionable changes or an increased cognition and reasoning about no change
project status

open source: scoreboard framework & story modules
continuing to refine our assessment instruments
similar project aimed at middle & high school students
3GSE: Games, Gaming, and Gamification in Security Education
thanks

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