

# Teaching Electrical Engineering with a Serious Game

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Menu (F10) 2 272 699 17/29 6,460

Farm attacked  
New Footman ready  
Barracks attacked  
Farm attacked  
Footman attacked  
Farm attacked  
New Peasant ready  
Footman attacked  
Farm attacked  
Peasant attacked

Stratagus  
Cycle: 29,888 30  
0 Person 6,460  
0 Computer 0/100

Stratagus V2.00, (c) 1998-2004 by The Stratagus Project.

UNPAUSED  
PAUSED  
UNPAUSED  
PAUSED

Talk:

F1 F2 F3 F4 F5 F6 F7 F8 F9 F10 F11 F12

210 (418/7mm) 1380 AD

**MANSA MUSA HAS** Mansa Musa - Malinese Empire (Annoyed)

Tradeable Items

- Mansa Musa Annoyed towards RBCiv-Adventure-3
- Technol: +1: "Years of peace have strengthened our relations."
- Make Peace
- Declare -2: "We are upset that you have fallen under the sway of a heathen religion."
- Hindu: +4: "You have traded with our worst enemies!"
- Mon: \* Open Borders to RBCiv-Adventure-3 for Open Borders
- Stop Trading With
- Adopt
- Hereditary Rule
- Slavery
- Organized Religion
- Convert

Hindu Missionary: 0/2  
100% Active

**MANSA MUSA OFFERS**

- Machinery
- Gold (80)

Here's my offer.

We accept your offer.

Sorry, we cannot accept such a deal.

Never mind...

Farewell... (Exit)

**YOU HAVE**

- Gold (210)
- World Map
- Technology
- Drama
- Divine Right
- Paper
- Make Peace With
- Declare War On
- Stop Trading With
- Adopt
- Convert

1065 [RBCiv-Adventure-0]  
814 [RBCiv-Adventure-1]  
757 [Hatchepout-2]  
667 [Mansamusa-2]

**YOU OFFER**

- Philosophy

CLEAR TABLE

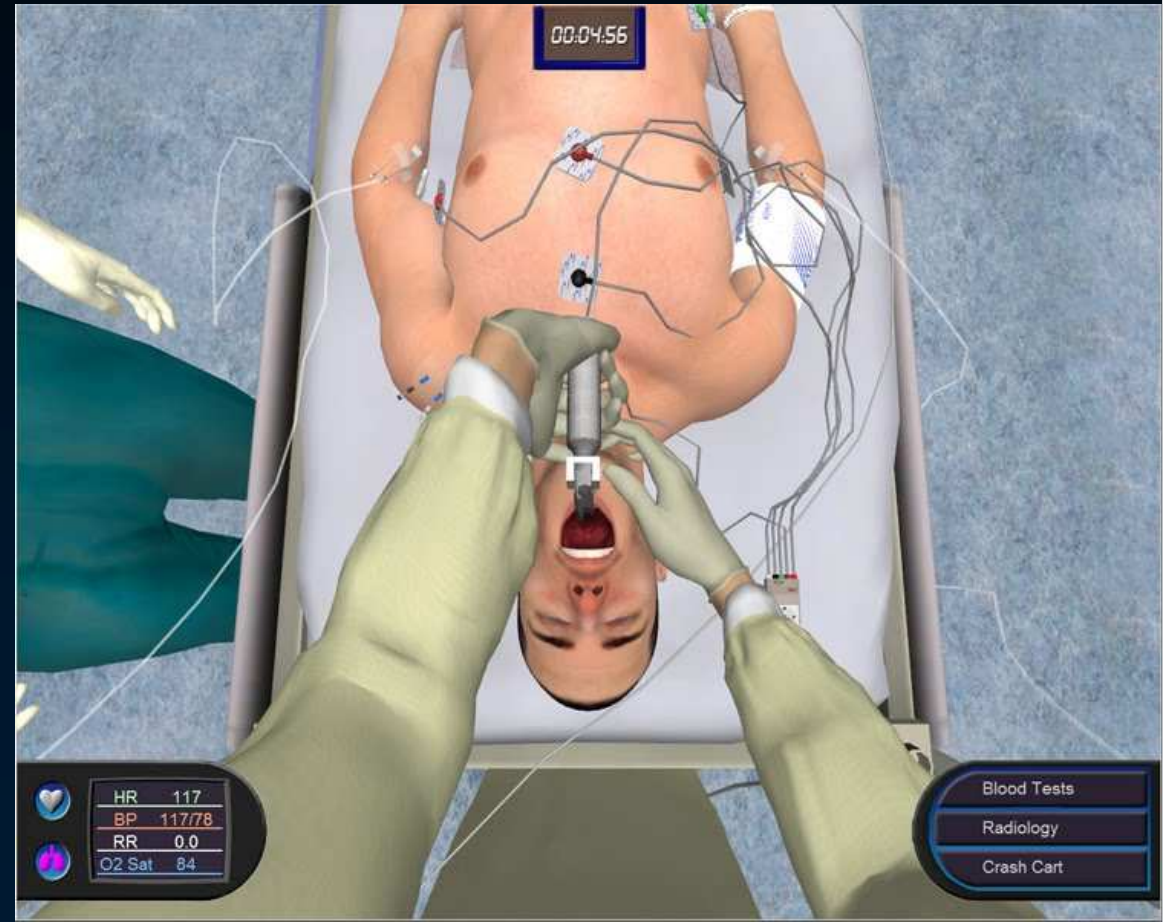
Metal 478 (796.0) 0.5 Energy 4676 (4200.0) 37k

Pos 8686 4743 Elevation -98  
Terrain type: valley  
Speeds T/K/H/S: 1.00 1.00 1.00 1.00  
Hardness: 200 Metal 1.0

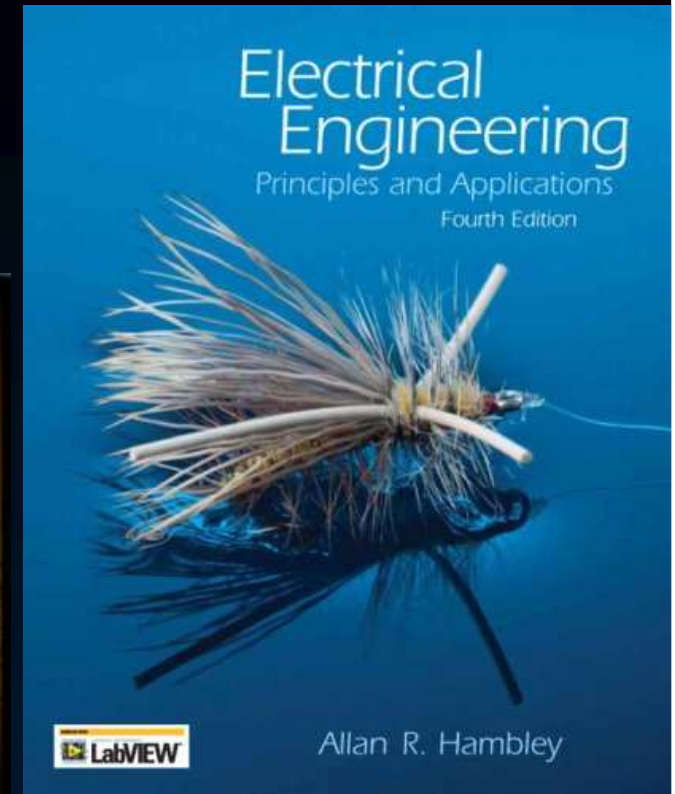
[NR]nicklg03 26% Ping:66 ms  
[NR]deathwhisper 22% Ping:66 ms  
[NR]GHero 58% Ping:0 ms 57:14



# Educational vs. Serious Games



# Game vs. Textbook



E & Eve's Electrical Endeavors tells the story of two characters, E and Eve, finding themselves trapped inside the wires of an electrical machine. On their quest to escape from this machine, they come across several electronic components like resistors, transistors, diodes and more. Some of them need to be tweaked into the right position, for the current to pass. By defining the correct circuit, the player will be able to progress to the next, more complex, level.

# Setup

- 187 VWO students of ~ 14.6 years old
- 2 groups
  - Game group: played game for 20 minutes
  - Text group: read text on transistor theory for 20 minutes
- Every student got the same test
  - 6 questions on transistor theory
- Every student completed a questionnaire
  - gender
  - most recent physics grade
  - enjoyment of task (game or text)

# Results: Effectiveness

- No significant difference between the average “most recent physics grade” of game group and text group
- Game group answered significantly more questions correctly than text group
- After filtering on gender:
  - Males from game group answered significantly more questions correctly than males from text group
  - For females there was no significant difference in questions answered correctly between game group and text group

# Results: Motivation

- Game group received significantly less enjoyment from their task than text group
- After filtering on gender:
  - Females from game group received significantly less enjoyment from their task than females from text group
  - For males there was no significant difference in enjoyment received between game group and text group
- ~80% of participants indicated that they would like to see more serious games in the classroom



# Serious Game in the Classroom

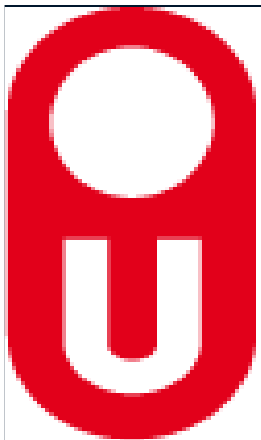
- This game seems to be effective, but mainly for boys
- This game seems to be less motivating than a textbook, but mainly for girls
- However:
  - We did not gather sufficient information to examine this counterintuitive result in more detail
  - We did not investigate long-term retention
  - We did not compare a game with a teacher

# Contact

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Understanding Society



[www.ou.nl](http://www.ou.nl)

**OpenUniversiteitNederland**