Web-based games to master core skills in introductory college mathematics

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Games in education - taxonomy

(Most emphasis)

Enjoyment/Engage
Insight/Understanding
Skill Building
Motivate/Expose/Engage
Learning/Understanding

Game Playing
Adding Gamification
Game Development

Games in Education

(CS education)
Quiz games

Kahoot!
The expression \((\cot \theta)(\sec \theta)\) is equivalent to

- Aim to make learning fun
- Not focused on skill building

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Building skill: short-term to long-term memory

• Two critical learning mechanisms (Sweller):
  • schema acquisition
  • transfer learned procedures to automatic (long-term) memory

• Atkinson & Shifrin
  • Memory model

Game - Solve for x

Solve for x using the operations on both sides of the equation

Plan:

Time:

Balance:

Score: 0

Level: 000000

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Game - Combining terms with exponents
Summary - math games to build skill

• Practice moves to long-term memory, frees working-memory for new concepts

• Built Solve-for-x, and Combine-terms-with-exponents games which are inherent to the subject matter

• Not a replacement, but a supplement - provides additional opportunities

• Plan to build dozens more for college-level Math and CS – any suggestions?
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