Game-Based Learning: Trends, research, & sheer ridiculousness

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Learning Games Lab

Science Pirates
The Curse of Brownbeard

MATH SNACKS

learninggameslab.org
1 billion downloads
Press W to +1
Press SPACE to fire
Press DELETE to clear your attack
Impact of *Math Snacks* Games Use
Math Test Performance of 5th Graders

*n=741 students in fifth grade*

**Math Snacks** introduced to Group A after Test 1

**Math Snacks** introduced to Group B after Test 2
Can games help people learn?
Can books help people learn?
Can classrooms help people learn?
Can pencils and paper help people learn?
Can group projects help people learn?
Can help people learn?
Can doing a worksheet with 22 other 2nd graders help people learn?
What can we do?
Rethink what we measure

- voluntary time on task
- understanding of value of math
- self-efficacy
- trust in teacher
- communication with parents
- share with friends
- teacher’s language

What can we do?
watch your assumptions
Effective implementation is the new innovation

Trends in game-based learning
“Teaching with Gate” video. Available at mathsnacks.com/gate
Teaching With *Overruled!* Animation

What happens when two measurement systems don’t quite match up, and how can proportional reasoning be used to fix the problem? Help the king and queen as they prepare for their wedding - but, first, you have to figure out how to convert from one measurement system to another.

**Addresses:** Techniques helpful in solving proportion, including tables, graphs, measurement, and equations. Using units to set up a correct proportion. Graphing proportions on a coordinate plane.

**Watch the animation** in [English](#) or [Spanish](#) on the main page for [Overruled!](#).
Lure of the Labyrinth is a digital game for middle-school pre-algebra students. It includes a wealth of intriguing math-based puzzles wrapped into an exciting narrative game in which students work to find their lost pet and save the world from monsters. Linked to both Common Core and national (NCTM) standards, the game gives students a chance to actually think like mathematicians.

Quick and Easy

How can I use these support materials?

Play the Game First!

In Lure of the Labyrinth, students are experiencing mathematics in a different way than they usually do in your classroom. But they are building strong connections that can be the basis for going further when you bring that experience into your classroom. That's why we think that playing the game first and then connecting that experience to your curriculum is the most powerful way to use...
Gate Math Game Discussion Questions

As students explore the Gate game, encourage them to think about their strategies and what they're learning through game play using strong questions. For example, you might ask:

- What do you like about this game?
- What are some things that make this game challenging?
- What strategies have you used to make the game easier?
- What is the best way to place your hands on the keyboard?
- What math do you see in this game so far?
- Did you notice the number line on the bottom of the screen and the scale under the character? How did these change as you built the numbers?
- How do the later levels in Gate get more challenging?
- What are some strategies you have used to build numbers more efficiently?
- How is multiplication used in the later levels of game play?
- What are some strategies you can share with your classmates about using multiplication, especially with decimals?
- What did you learn about place value or building numbers that you didn’t know before playing the game?

Adapted from: Source
TEACHING WITH GAMES

Teaching with games “allows me to hit multiple learning styles in the same lesson in a much easier way than the normal classroom environment.” -David McG, from Best Practices for Using Games & Simulations in the Classroom Guidelines for K–12 Educators (PDF)

You’ve probably seen first-hand how absorbing digital games can be for young minds. What if you could re-create that level of engagement in the classroom? By bringing the world of game-based learning into education - through GameUp - we’re doing just that. Educational games add a new way to captivate students and help them learn in a manner that’s meaningful for them.

Quality Learning Games

- Motivate and provide goals
- Encourage participation
- Foster creative, interactive problem-solving
- Strengthen critical and systems thinking
- Pose adaptive challenges
- Spark inquiry
- Require very little prep by busy teachers
# Shout Out and Watch Out Report

This report provides a snapshot of how students are doing right now. Celebrate your students’ success (Shout Out!) and intervene with those students in need of help (Watch Out!).

### Shout Out!

<table>
<thead>
<tr>
<th>Name</th>
<th>Challenge Round Skill</th>
<th>Tool Expert</th>
<th>Challenge Round Expert</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>The player has successfully solved a challenge round in fewer than 5 guesses.</td>
<td>Player has successfully used every tool in Game Over Gopher.</td>
<td>Player has completed all challenge rounds.</td>
</tr>
</tbody>
</table>
Rethink how we distribute

- support for learners
- partnerships
- support for teachers
- support for parents

What can we do?
design process $\geq$ (idea)
The World of Lexica
Support design process

as educational consultants

in publications

on review committees

What can we do?
GlassLab Game Design Handbook

Meaningful games create powerful impacts on players, fostering a positive learning culture that enables expression and the ability to learn from failure. GlassLab's Game Design Handbook serves as a living, quick, and actionable resource for learning game design for developers (though every person is a game designer at heart!).

Popular Topics

How to Use this Guide
Start here to get a clear vision for what the Handbook aims to achieve, and how you fit into the picture.

Making Good Games
Define core mechanics that make good games, and match them to learning.

Finding Key Competencies
Concerns in modern game design and how to ensure that games can provide measurable impact.

Metrics
Compose behavioral data into meaningful and reliable indicators of a player's performance or capability.

Grant Funding
Gain insight into the changing world of grant funding for digital games.

Quick Start Guide
Want a quick overview of the what, not the why? Check this out!
The Learning Games Design Model: Immersion, Collaboration, and Outcomes-Driven Development

Barbara Chamberlin, New Mexico State University, USA
Jesús Trespalacios, Boise State University, USA
Rachel Gallagher, New Mexico State University, USA

ABSTRACT

Instructional designers in the Learning Games Lab use an approach for the creation of educational games, design projects and is extensible to other design projects (a) work collaboratively to ensure educational game design projects (b) immerse themselves throughout development with members of the team. This chapter presents the implications of this approach for the creation of educational games. The learning games design model in practice.

Keywords: Education, Educational Game Design

Chapter 8
Bridging Research and Game Development: A Learning Games Design Model for Multi-Game Projects

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What are your goals for your child’s future?
go to college
high-paying job
similar beliefs
well-travelled
happy
healthy
contribute to others
fulfilled
safe

contribute to others
knows multiplication tables

can name all U.S. presidents

knows letters colors numbers shapes

can write a formal letter

resilient

capable

self-aware

kind

active

inquisitive

self-directed, lifelong learner

problem-solver
Am I creating educational tools that teach children to be...

- self-aware
- capable
- active
- problem-solver
- resilient
- kind
- inquisitive
- self-directed, lifelong learner
- disciplined
There is **what** we learn

and there is

**how** we learn it.
Security Theater: (n)

the practice of investing in countermeasures intended to provide the feeling of improved security while doing little or nothing to actually achieve it.

term attributed Bruce Schneier
Educational Theater: (n)

the practice of creating or using educational tools which seem as though they should be educational while not addressing the more crucial needs.

(I made this up)
Educational theater (and easily copied)

Crucially important (and difficult to teach)

Source: Joan Ganz Cooney Center and New America
Earnings: $574

0.00985
9.85 \times 10^3
98.5
9.85 \times 10^1
9,850
9.85 \times 10^{-3}

Match up the clouds correctly.
we think math looks like:
we think math looks like:

$4 \times 9 = \text{___}$?
**we think math looks like:**

\[4 \times 9 = ____?\]
we think math looks like:

\[
\frac{2}{3} \times \frac{3}{4} = ____? 
\]
Learning is fun.

Our job is to NOT screw that up.

-- Daren Carstens, Educational Software Designer
preach it, sister!

Amen!

word.
Tackle the hard stuff.

Add on to our existing objectives.

Don’t settle for educational theater.

Think of the way they are learning.

What can we do?
“Are we forming children who are only capable of learning what is already known?”

-- Jean Piaget
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