

Educational Games

Kids could be learning while playing

91%

of kids play video games



Figure 1: Minutes children play video games per day

What are Educational Video Games?

Educational games are video games that teach the player a specific subject, concept or skill.

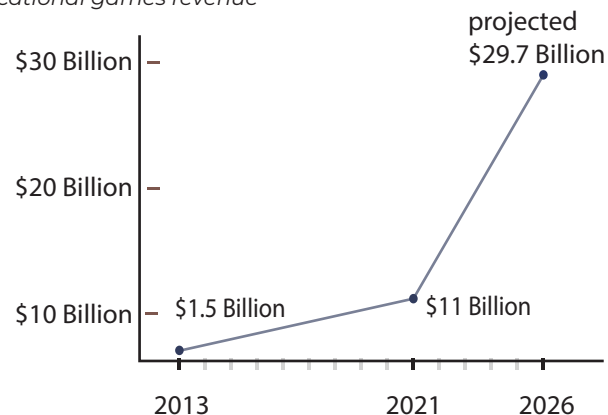
Why games and education?

- | | |
|--------------------------|----------------------------|
| Expand knowledge | Communication |
| Engaging and motivating | Reinforce development |
| Memory retention | Connection for students |
| Teamwork / collaboration | Having fun |
| Problem solving tasks | Make subject more exciting |
| Creativity | Critical Thinking |
| Learning | Understanding concepts |

"10 years ago, the question was, 'Are games appropriate for education?' Now, that question has been replaced by, 'How can games be optimized to impact learning'"

Market Growth

Figure 2: Educational games revenue



History

1967 - *Logo Programming* is considered the first educational video game. Its main purpose was to teach concepts of programming.

1973 - *Lemonade Stand* was a business simulation that taught basic economics.

1982 - *Oregon Trail*, was the most famous and impactful, educational game of all time. It is a role playing simulation to teach history on the American westward expansion.

1983 - *Reading Rabbit* was created in 1983 for infants to age 9. It's main focus was to teach reading and spelling.

1985 - *Where in the World is Carmen Sandiego?* It wasn't intended to be educational, but schools adopted it to teach geography.

1987 - *Number Munchers* and *Math Blaster*

80's -90's - simulators such as pilot games and *SimCity*, which teaches city management, as well as single subject action and adventure games also grew in popularity during this time.

What do students feel?

Students like playing educational games in the classroom instead of having a lecture and also like playing games for homework. Playing educational games for recreation, depends on how "good" the game is. They love *Mine Craft* and that has educational elements.

Today

Games of today are on multiple platforms, Console, PC, Apple, iPad and handheld devices. Popular educational games include *Brain Age*, *Little Big Planet*, *Minecraft* and *Kahn Academy for Kids*.

Notable Games

- Oregon Trail
- Big Brain Academy
- Reading Rabbit
- Carmen Sandiego
- Dragon Box
- Civilization
- Minecraft
- Math Blaster
- Kahn Academy
- Mind Snacks
- Roblox
- SimCity
- Zoombinis
- Little Big Planet
- Portal

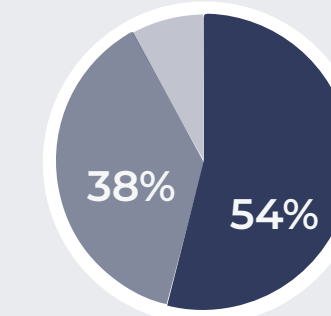
What makes a good educational game?

- Mixing and varying educational elements and mechanics
- Creating eye-pleasing art, animations, and sound effects
- Rewards such as points, achievements, and badges
- Invoking intrinsic motivation
- Attaining knowledge is linked with visual
- Good story, build a plot to entice kids to want to know what's next. Telling stories also helps retain information.
- Keep parents involved. Younger kids help them.. and older kids play with them.

What makes a bad educational game?

- Don't make the difficulty too high
- Don't teach more than one subject
- Some don't teach enough
- The act of discovery of game, not able to retain information
- Drills and skills, chocolate covered broccoli

Figure 3: Teachers wanting curriculum-based games in the future



What do teachers feel?

They want curriculum-based games.

What are the barriers for teachers?

Teachers have a hard time matching games to the common core curriculum. They do not know where to find good game content. They are stressed about end of year standardized testing that they don't have time for games. Schools lack technology resources. Either the hardware is out of date or there is not enough devices for all students. Cost of games is also a big deterrent, since teachers don't have purchasing power.

Dragon Box can teach 5 year olds how to do algebra, but, "schools don't want their 5 year-olds working on algebra; they want them learning the basics of the number system."