2022

Game-based Learning

YEAR IN REVIEW

filament games

The Educational Value of Digital Learning

In 2022, the use of edtech in classrooms was on the rise! In a recent **study conducted by the EdWeek Research Center**, researchers found that around half of the teachers surveyed reported their students using some sort of edtech for 1-4 hours daily.

Why is game-based learning a great form of edtech to fill those hours?

47%

of teachers reported that low-performing students received the **greatest benefit** from games

65%

of teachers reported that low-performing students became **more engaged** with content overall when it was presented in the form of a game

55%

of teachers said that their lower-performing students were **more motivated** when playing a game

Joan Ganz Cooney Center

Through game-based learning, students cultivate 21st century skills. When it comes to these building skills in 2022, educational video games were an excellent resource for learners.

For example, *Newsfeed Defenders*, a game Filament Games created with iCivics, gives students an opportunity to learn **media literacy** at home or at school, leading to safer and more productive time spent on the web later.

In a study conducted by researchers from the National College of Ireland, a math game called *Count With Me!* positively affected students' 21st-century learning skills, including logical thinking, problem-solving, self-directed learning, knowledge building, and digital literacy. Researchers found the following:

96%
of students believed that the *Count With Me!* game helped them to develop their problem solving skills

82%
of students liked self-pacing through the game based educational material

78%
of students agreed that the math game has improved their knowledge

81%
of students were satisfied with their achievements in the game

ISN'T IT ALREADY THE
21st century?

WHAT ARE 21 CENTURY SKILLS?

21st century skills, also known as future-facing skills, include the 4 C's:

critical thinking

communication

collaboration

creativity

21st century skills also include media literacy, technological literacy, and other life skills.

What to know even more about the evidence behind the efficacy of educational games? **Check out the Filament Games blog.**

The Educational Value of the Metaverse

The Metaverse caused quite the buzz in 2022

WHAT IS THE
METAVERSE?

An abstract concept **coined by famed science fiction author Neal Stephenson in his 1992 novel Snow Crash**, the Metaverse is perhaps most straightforwardly explained as the "next iteration" of the internet. **Described by The Washington Post** as, "*a shared, virtual space that's persistently online and active, even without people logging in,*" the Metaverse spans both the digital and physical worlds, populated by "content" and "experiences" created and operated by a wide variety of contributors, including users themselves.

What opportunities does the Metaverse hold specifically for educational purposes?

Last year, **Filament Games, Roblox, and the Museum of Science joined forces to create** *Mission: Mars*, an immersive engineering experience that allows users to explore and find inventive ways to survive on Mars. Immersive learning like *Mission: Mars* can keep students engaged and motivated to learn.
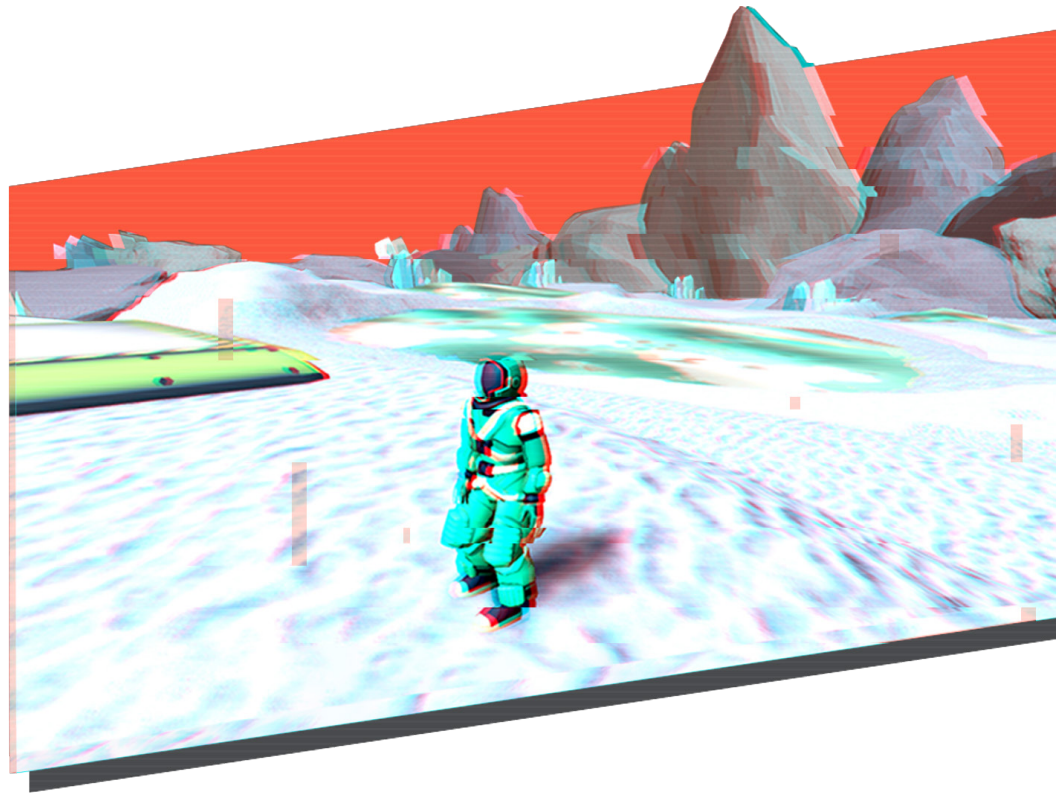
3 Reasons Why Immersive Learning Keeps Students Engaged

1 71% of children aged 2-17 played video games in 2022. Immersive learning in video games and/or the Metaverse combines students' innate interests with their learning!

2 Low risk, high reward. In video games, students can fail without worrying about receiving a bad grade, and they can iterate on a problem until they find a solution.

3 Video games provide instant feedback. While playing an educational video game, students will immediately know if they are successful or need to try again - no wait time necessary.

Want to know more about the educational potential of the Metaverse?
Check out Filament Games CEO Dan White's thoughts on learning in the Metaverse.

The Educational Value of Esports

What use are esports in the K-12 classroom? After all, popular multiplayer entertainment games might be fun, but they don't have much educational value, right?

Not quite! **Teachers have reported that many students joining esports leagues are those not involved in other extracurricular activities** and that their involvement can go a long way, improving their grades and focus. Like other forms of game-based learning, **esports provide many opportunities for students to learn important skills like communication, collaboration, and technological literacy**.

Esports are growing more popular each year! In fact, the total audience of esports is expected to surpass 640 million in 2025.

Esports using explicitly educational games could double the educational value of these leagues. What does this look like in practice? Something like **the FIRST Global RoboCo Challenge** (FGRC).

The entirety of the FGRC is structured around the paradigms *FIRST* has created. *FIRST* has demonstrated for decades that robotics education is a proven pathway toward STEM affinity, education, and careers. Since 1989, *FIRST* has been leveraging robotics competitions to motivate young people to pursue education and career opportunities in STEM fields. *FIRST* programs currently reach about 560,000 students worldwide. *FIRST* Alumni are likelier to declare a STEM major and are 3.4x likelier to major in computer science and 2.6x likelier to major in Engineering.

WHAT IS FIRST?

Established by inventor and entrepreneur Dean Kamen, *FIRST*® is a US-based 501(c)(3) not-for-profit with the mission to inspire science and technology leadership and innovation in young people from all nations to increase understanding, impress the importance of cooperation, address the world's most pressing issues, and improve quality of life for all by igniting a passion for science, technology, engineering, and math (STEM) among the more than two billion youths of the world.

Team Algeria
2021 *FIRST* Global RoboCo Champion

Modeled after and in the spirit of *FIRST* competitions, the *FIRST* Global RoboCo Challenge is an Olympics-style, international robotics competition that takes place digitally in RoboCo, **a PC video game developed by Filament Games** in collaboration with *FIRST* Global. In the game, teams build and control robots to conquer tricky challenges inspired by real world robotics applications. The Challenge tasks participants with playing RoboCo on their computers, capturing their best attempts at each round.

RoboCo targets four key learning objectives: **STEM interest and affinity, future-facing skills, engineering literacy, and coding literacy**. In FGRC, participants experiment with engineering concepts like torque, velocity, rotation, and acceleration while iterating on designs. Players use a menu of parts like pistons, gears, servo motors, and blocks to design and build unique robots, and use the robots they create to conquer complex challenges that foster **creative problem solving** and design thinking.

The Metaverse, esports, and digital learning — all were hot topics in 2022 and will continue to be in 2023. There's never been a better time to leverage the power of game-based learning for a positive impact. **Get in touch with Filament Games** *for more information and a free consultation on our custom educational game development services!*