

TEACHERS EMBRACE WIDESPREAD USE OF DIGITAL GAMES IN THE CLASSROOM: A Professional Educators Network Survey (Part 2)



Since 1978, NTC has brought dynamic educational programs to thousands of schools each year, presenting on important topics including energy efficiency, electrical safety, financial literacy, health and wellness, STEM learning and more. Over the decades we've witnessed the formation of a national community of passionate educators, dedicated to providing their students with impactful educational resources. This is how NTC's Professional Educators Network (PEN) was born in 2014. Since then, we've utilized PEN to communicate with and solicit feedback from educators across the country – most recently with our PEN survey on the use of digital games in the classroom.

In the winter of 2018, NTC surveyed the nearly 7,000 members of our Professional Educators Network (PEN) in order to gain a greater understanding of the positive impacts of digital games on students and teachers. We wanted to explore how and why digital games became one of the fastest-growing educational breakthroughs in K-12 schools today.

In April, the results were published in our report, "Teachers Call for Digital Games That Highlight Important Life Skills: A Professional Educators Network Survey (Part 1)." The findings were both revealing and unsurprising: While educators confirmed that the use of digital games will continue to grow in upcoming school years, the specific ways in which those games are obtained and utilized, and the perceivable benefits on students and educators, provided many insights.

Part 2 of our PEN survey provides a deeper dive into the response data, analyzing how the use of specific technologies and students' grade levels affected how digital games were implemented and received.

What's in a game?

Our survey focused not on apps in general – which can take on many different forms, only some of which utilize game-based learning – but on educational digital games specifically. According to *eLearning Industry*, educational digital gaming "involves the use of computer and video games specifically aimed to produce learning outcomes. It is designed to balance subject matter and gameplay, and later assesses the ability of the learner to retain and apply the acquired knowledge to real-world scenarios."¹ This was the definition we used as a foundation to understanding the future of digital games in K-12 education.

In order to understand how quickly educational gaming has evolved in its relatively brief history, we turned to the website Immersed Games, which provides a fascinating timeline. The earliest game that was used in schools for this purpose was *Logo*, a computer-

programming game developed in 1970 with a heavy emphasis on math. A year later, one of the most well-known educational games of all time was introduced: *The Oregon Trail*, a historical adventure game which became a mainstay at elementary schools for several decades.

With the growth of personal home computers, CD-ROMS and the Internet, educational games experienced a boom in popularity, providing an ideal way to engage students in potentially difficult subjects like geography, math and science. From *Where in the World is Carmen Sandiego?* (1985) to *Math Blaster* (1987) to *Minecraft* (2011), the instructional capabilities of digital games rapidly evolved. In the words of Immersed Games, "educational gaming continues to follow the trends of technology and innovation by trying to create the perfect blend of learning and fun."²

Deep dive: How technology makes an impact on educational digital gaming

Before revisiting the main points we learned in Part 1, we'd like to focus on the new discoveries made by approaching the data from a different perspective. With Part 2 of our PEN report survey, we wanted to explore how specific technologies and students' grade levels make an impact on the use of educational digital games in the classroom.

When analyzed according to which technologies educators use in the classroom, the results were mostly consistent across the board, with 88-94% of respondents claiming to use digital games in the classroom regardless of technology. See Figure 1.

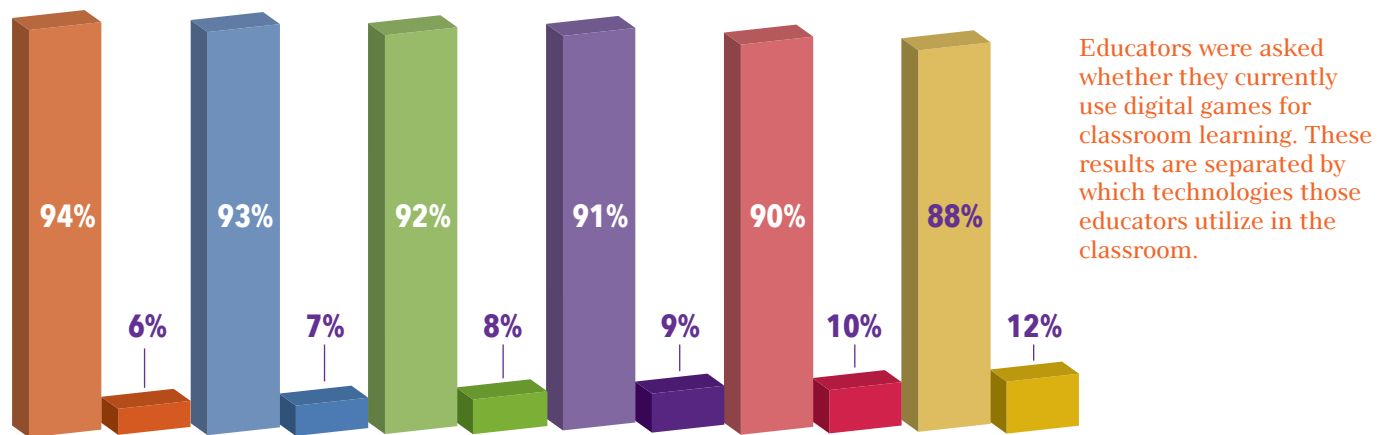
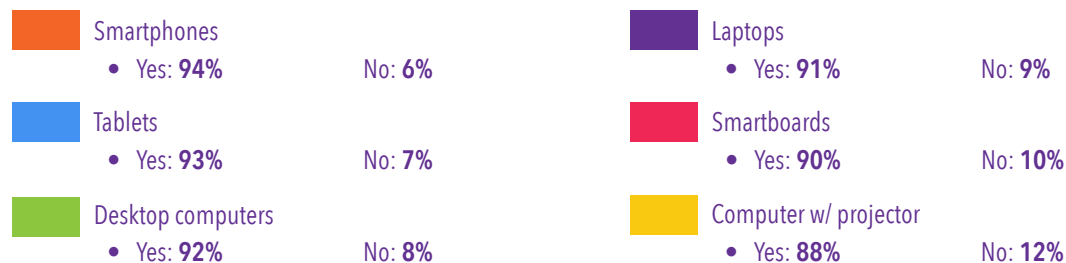


FIGURE 1 DO EDUCATORS EMPLOYING VARIOUS TECHNOLOGIES IN THE CLASSROOM CURRENTLY USE DIGITAL GAMES AS PART OF THEIR CURRICULUM?



The biggest variation lay in how educators acquired the games used on those devices. The majority of teachers still only used free digital games, though this ranged from 65% for educators who use tablets in the classroom, to 83% for those who use desktop computers. This suggests a substantial variance in the number of free digital games available on different devices, with an especially noticeable lack of free games available for tablets – a prime opportunity for organizations to support an educational gaming market with high demand and low supply. See Figure 2.

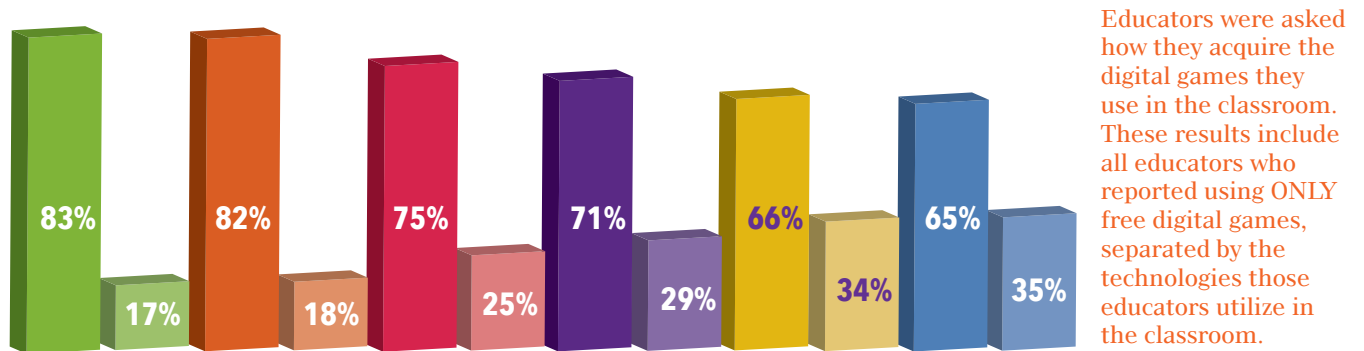
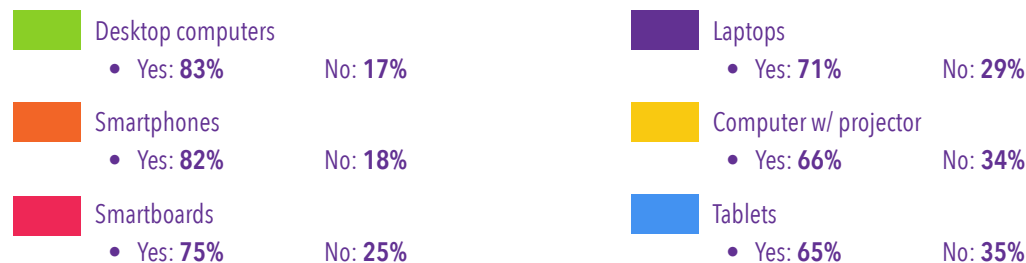


FIGURE 2 DO EDUCATORS EMPLOYING VARIOUS TECHNOLOGIES IN THE CLASSROOM ONLY USE FREE DIGITAL GAMES AS PART OF THEIR CURRICULUM?



In addition, only half of the respondents for each technology reported using games that were provided by their schools, meaning educators frequently have to depend on other sources. The data set for one of these sources varied noticeably. For most technologies, a relatively low percentage (approximately 10%) claimed to use games provided by their PTA/PTO board. But for smartphones, 23% reported using educational games provided by their PTA/PTO – a revealing insight, considering the huge number of educational gaming apps currently being developed for mobile devices.



Insight: While teachers heavily rely on free educational games regardless of the technologies they use, some technologies – such as tablets and laptop computers – offer fewer high-quality educational games for free, forcing teachers to acquire them in other ways.

Furthermore, while 5-12% of educators using other technologies claimed that games were provided by an outside source (such as a private organization or community fund), among teachers that use smartphones for instructional purposes, no respondents acquired their games through an outside organization. This suggests a growing market with high demand among educators who disproportionately rely upon PTA/PTO boards to fund educational games for smartphones, faced with a lack of outside organizations who sponsor them. See Figures 3 and 4.

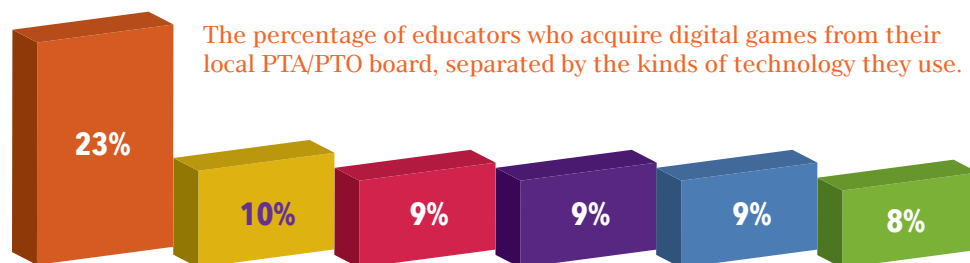


FIGURE 3 HOW MANY EDUCATORS USING VARIOUS TECHNOLOGIES RELY ON LOCAL PTA/PTO BOARDS TO ACQUIRE DIGITAL GAMES USED IN THE CLASSROOM?



The percentage of educators who acquire digital games from outside sources such as private organizations or community funds, separated by the kinds of technology they use.



FIGURE 4 HOW MANY EDUCATORS USING VARIOUS TECHNOLOGIES RELY ON OUTSIDE SOURCES (SUCH AS PRIVATE ORGANIZATIONS OR COMMUNITY FUNDS) TO ACQUIRE DIGITAL GAMES USED IN THE CLASSROOM?



Insight: Teachers who use educational digital games on smartphones – a rapidly growing market – disproportionately have to rely on PTA/PTO boards to provide them, since very few outside organizations sponsor programs to make them available to schools.



Even more revealing is a comparison of educators who only use one digital technology in the classroom versus educators who use multiple technologies. We wanted to analyze the importance of having educational games compatible across numerous platforms. Not surprisingly, educators who use multiple technologies in the classroom employed digital games at a much higher rate (91%) than educators who only rely on a single technology (70%). See Figure 5.

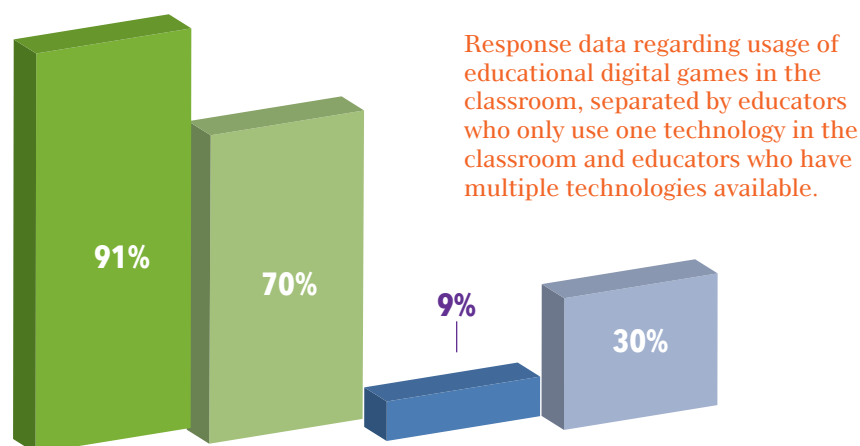


FIGURE 5 DO CLASSROOMS WITH ONLY ONE TECHNOLOGY AVAILABLE VS. CLASSROOMS WITH MULTIPLE TECHNOLOGIES CURRENTLY USE EDUCATIONAL DIGITAL GAMES?



These trends are likely to continue in the upcoming school year. Among educators who currently only use one technology in the classroom (for example, desktop computers only), 8% reported that they will utilize educational games less often in the upcoming school year, and 17% claimed that they won't use them at all. However, the majority still reported that they will make use of digital games more often (42%) or the same amount (33%) in the upcoming school year. Compare this to educators who employ more than one technology in their classroom: 7% reported they will use digital games less often, and only 1% claimed they will not use them at all. Meanwhile, 39% stated they will use digital games more often and 53% claimed that their usage rate will stay about the same, for a whopping 92% whose utilization of digital games will remain steady or increase. See Figure 6.

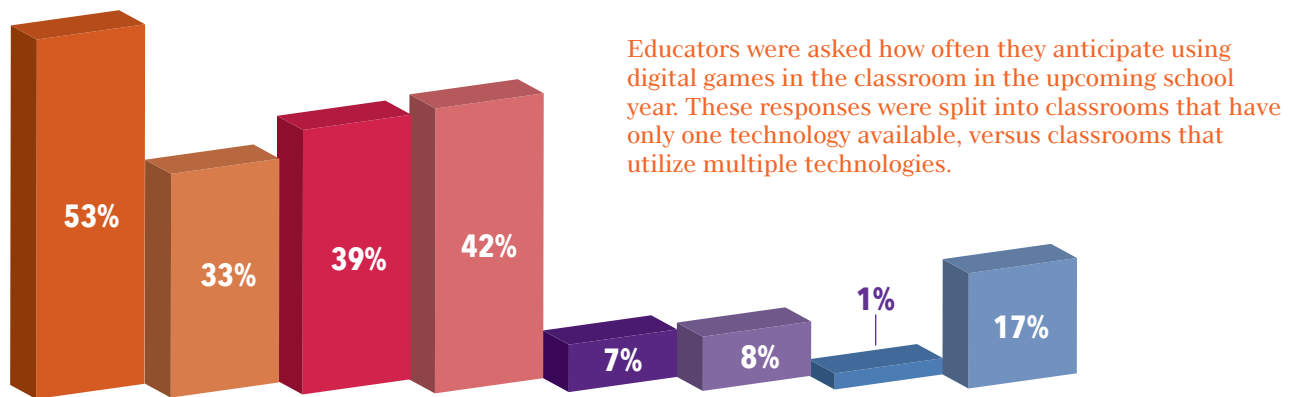
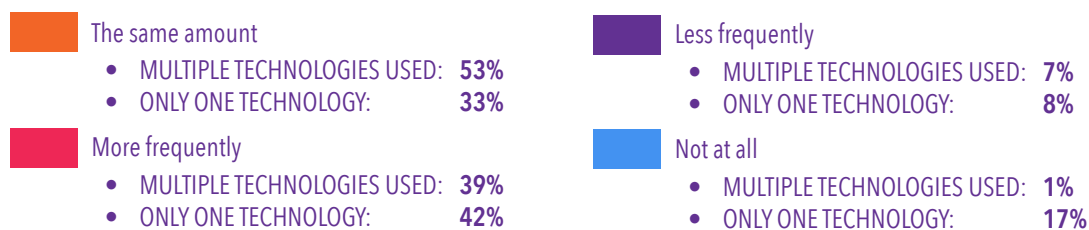


FIGURE 6 HOW OFTEN DO EDUCATORS IN CLASSROOMS WITH ONE TECHNOLOGY VS. THOSE WITH MULTIPLE TECHNOLOGIES ANTICIPATE USING DIGITAL GAMES IN THE UPCOMING SCHOOL YEAR?



Finally, while 18% of educators who have access to multiple technologies claim to have difficulty finding useful or appropriate educational games, 33% of educators who use only one technology report having the same problem – suggesting that valuable digital games are easier to access if teachers can make use of various technologies (for example, utilizing laptops, tablets and desktop computers in conjunction). The takeaway is clear: As digital media and technologies continue to multiply, it is increasingly important that educators have access to numerous platforms and that cross-compatible educational games are made available to them.

Insight: Given the variety of digital technologies now available in the classroom, it is important for educational digital games to be compatible across different platforms (laptops, tablets, smartphones, etc.) and for teachers to have access to various digital technologies.

Deep dive: How does grade level impact the use of digital games?

We also wanted to explore how teachers' grade levels impacted the implementation and benefits of educational digital games. We split the respondents into three grade levels: lower elementary (pre-kindergarten through 2nd grade), upper elementary (3rd through 5th grade) and middle school (6th through 8th grade). Respondents classified as "other" (administrators, special education teachers, etc.) were excluded from these analyses.

As expected, general trends were consistent across the board. For example, 91% of both upper elementary and middle-school teachers reported using digital games in the classroom, along with 87% of lower-elementary educators. Predictions of future trends were also remarkably similar: 90% of lower-elementary teachers anticipate using educational digital games more often or the same amount in upcoming school years, along with 89% of upper-elementary teachers and a staggering 97% of middle-school teachers. Clearly, the high utilization of digital games at present and in the near future spans numerous grade levels. See Figures 7 and 8.

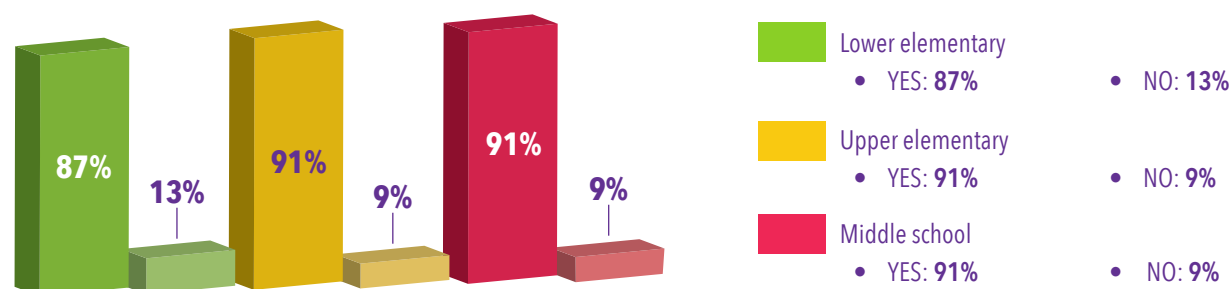


FIGURE 7 DO EDUCATORS AMONG DIFFERENT GRADE LEVELS CURRENTLY USE DIGITAL GAMES FOR CLASSROOM LEARNING?

Educators were asked how often they anticipate using digital games in the classroom in the upcoming school year. These responses were separated by grade level.

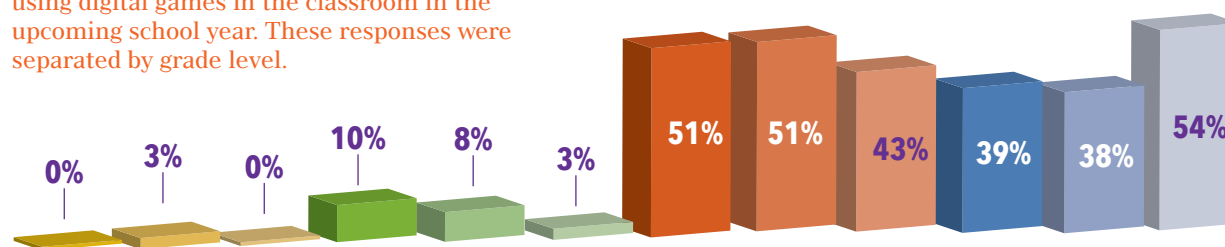


FIGURE 8 HOW OFTEN DO EDUCATORS AMONG DIFFERENT GRADE LEVELS ANTICIPATE USING DIGITAL GAMES IN THE UPCOMING SCHOOL YEAR?





Insight: The majority of classrooms across all grade levels currently employ educational digital games, and educators of all age groups expect that number to increase or stay the same in upcoming school years.

But there were also intriguing variations. For one thing, the kinds of technologies employed in the classroom changed somewhat: Laptops were the most prevalent technology among middle-school teachers (94% of whom use laptops in the classroom) and upper-elementary teachers (80%). Only 59% of lower-elementary teachers employ laptops in the classroom, generally preferring to use a single computer hooked up to a projector (65%). The educational and formative capabilities of various technologies differ between age groups, making it crucial to provide numerous different devices and games with cross-platform compatibility to teachers. See Figure 9.

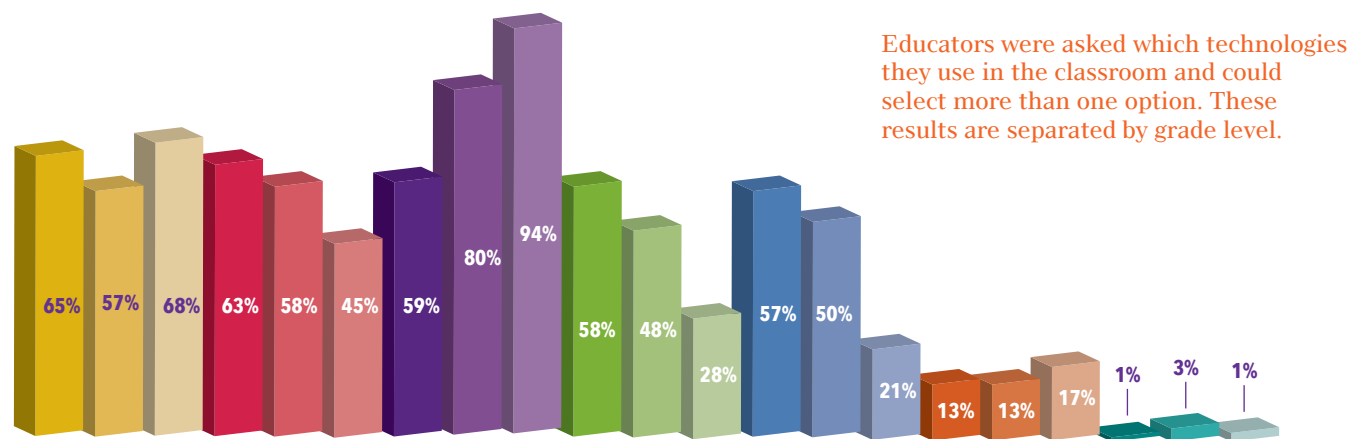
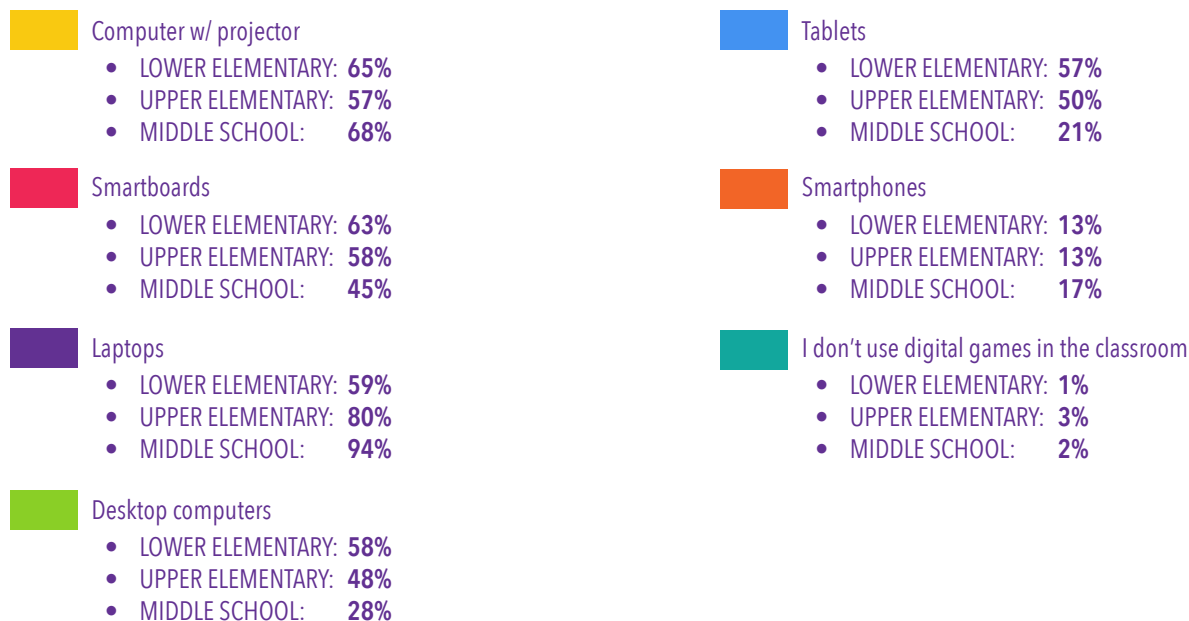


FIGURE 9 WHICH TECHNOLOGIES DO EDUCATORS OF VARIOUS GRADE LEVELS USE IN THE CLASSROOM?



Insight: Educational digital games provide a wealth of positive, lasting impacts that can affect students of different age groups and subjects in various ways.



The specific benefits of using educational digital games also varied between grade levels. While their ability to appeal to multiple learning types was ranked as the most important benefit by all age groups, lower-elementary teachers emphasized games’ ability to provide a narrative or scenario that allows students to engage with another world – a powerful way to inspire and educate students of this age group, who tend to be drawn to fantasy and storytelling. Lower-elementary school educators ranked the importance of this benefit a 3.4 out of 6, as compared to upper-elementary and middle school teachers’ ranking of 2.7. See Figure 10.

Educators were asked to rank the benefits of digital games on a scale of 1 (the least educational) to 6 (the most educational). This data indicates each benefit’s average ranking and is separated by grade level.

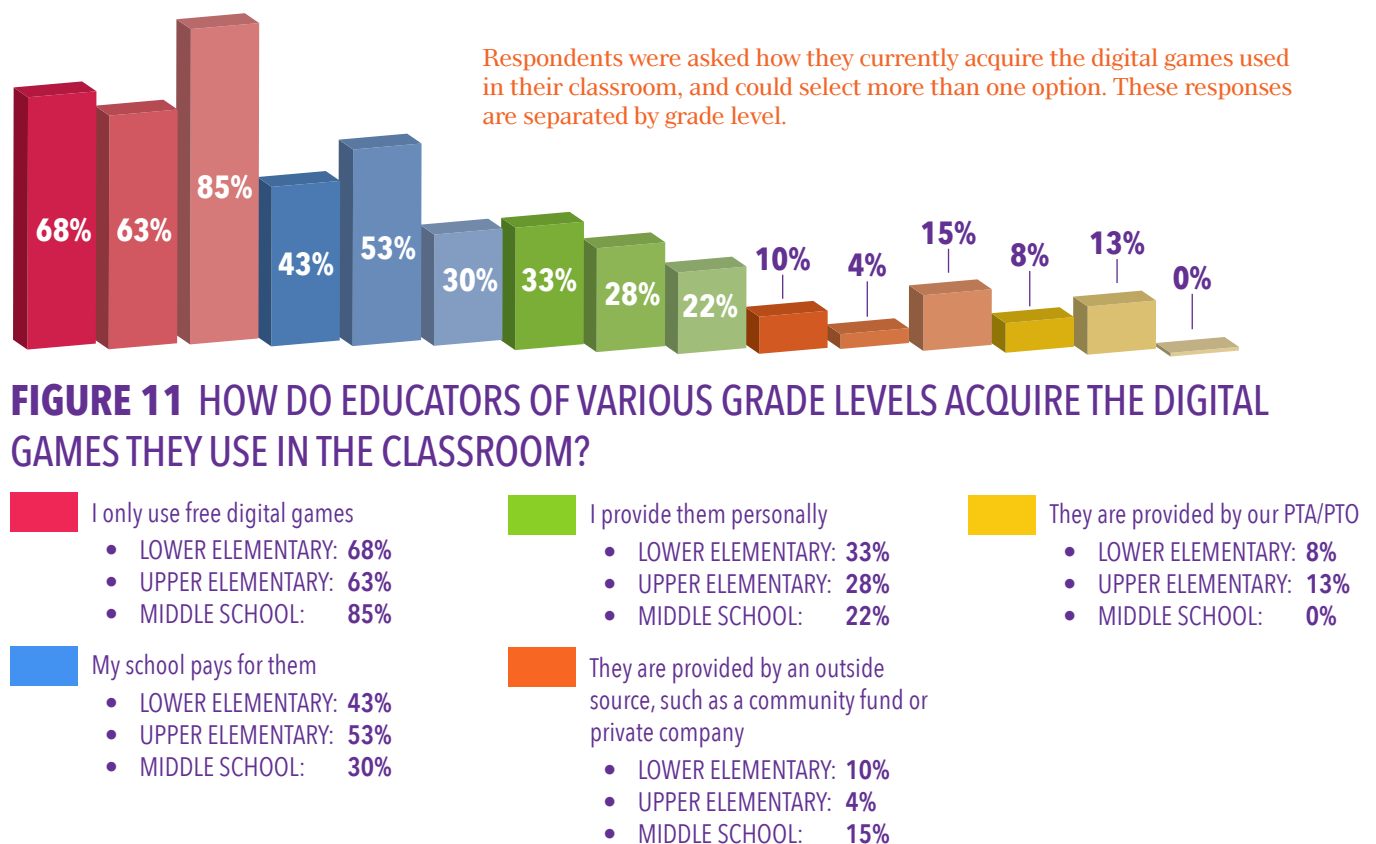
	LOWER ELEMENTARY	UPPER ELEMENTARY	MIDDLE SCHOOL
They appeal to a wide variety of learning types	4.2	4.5	4.1
They not only teach students, but require them to apply that knowledge in a productive way.	3.6	3.9	4.0
They incorporate a narrative that calls for players to engage with another world, place or time.	3.4	2.7	2.7
They encourage students to cooperate in order to solve problems.	3.4	3.8	3.7
They bring students into a world of situations to which they can relate.	3.2	3.4	3.3
They ask students to address circumstances that call upon their social-emotional skills to solve problems.	3.2	2.7	3.2

FIGURE 10 RANKINGS OF EDUCATIONAL BENEFITS OF USING DIGITAL GAMES IN THE CLASSROOM, SEPARATED BY GRADE LEVEL

Educators classified as “Other” (which included many special education teachers) also provided an interesting variance: They ranked games’ ability to encourage students to cooperate as the most important benefit, ranking it a 4.15 out of 6 on average. This was the only group that didn’t select games’ ability to appeal to many different learning types as the most important benefit. In short, educational digital games provide a wealth of positive, lasting impacts that can affect students of different age groups and subjects in various ways.

Finally, the specific sources from which educators of different grade levels acquire digital games are revealing. While 43% of lower-elementary and 53% of upper-elementary teachers utilize games provided by their schools, only 30% of middle-school teachers do so – suggesting that middle schools have more difficulty procuring educational games for their educators to use. In addition, zero middle-school teachers report obtaining games from their PTA/PTO, as opposed to 13% of upper-elementary and 8% of lower-elementary teachers.

Consequently, a much higher percentage of middle-school educators have to use free educational games only – 85%, as opposed to 63% for upper-elementary and 68% for lower-elementary; and 15% of middle-school teachers have to rely on outside organizations to fund educational games, in contrast to upper-elementary (4%) and lower-elementary (10%). While it is important for outside organizations to sponsor educational digital games for all ages, there appears to be a particular demand among middle-school educators, for whom access to free digital games is not often provided by the schools in which they teach. See Figure 11.



Insight: The technologies used, educational benefits and sources for educational digital games vary among grade level, but no matter the age group, it’s important for schools and outside organizations to provide free access to games for educators.

Teachers told us

Now that we've revealed the insights we learned from re-analyzing the data, let's explore a recap of the broader lessons learned in Part 1 of the PEN survey report. Educators' responses to our PEN survey made it clear that digital games are being used frequently, with a whopping 98% of educators reporting that they already use at least one kind of digital technology in the classroom. See Figure 12.

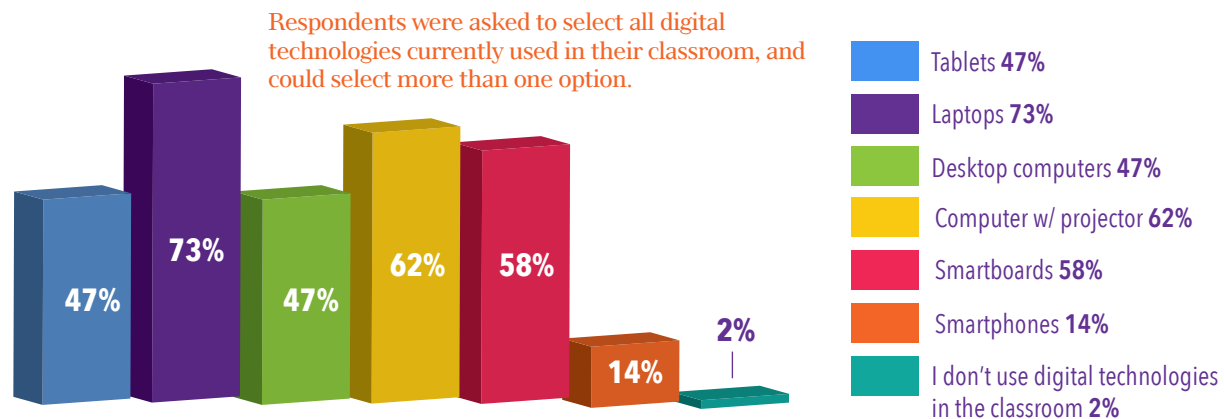


FIGURE 12 WHAT KIND OF DIGITAL TECHNOLOGIES DO YOU USE IN YOUR CLASSROOM?

Beyond simply utilizing digital technologies in the classroom, a large number of educators currently use digital games as a major part of their curriculum, with 87% claiming that they currently use digital games for classroom learning. The majority of educators also indicated that they will continue to employ digital games in the classroom: 51% of respondents plan on using digital games about the same amount in the upcoming school year, while 39% intend to use them more frequently. Only 8% of educators who currently use digital games in the classroom expect to use them less frequently in the upcoming school year. See Figures 13 and 14.

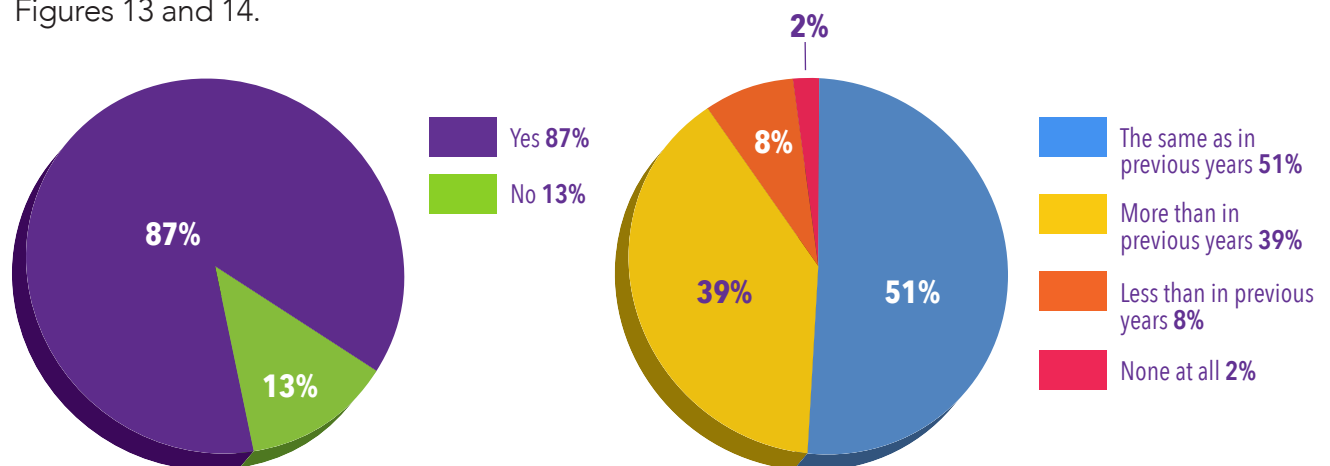


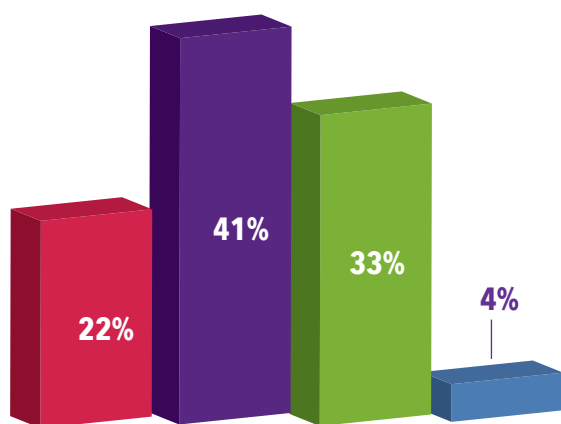
FIGURE 13 DO YOU CURRENTLY USE DIGITAL GAMES FOR CLASSROOM LEARNING?

FIGURE 14 HOW MUCH TIME WILL YOU DEVOTE TO DIGITAL GAMES IN THE UPCOMING SCHOOL YEAR?

Insight: 98% of educators already use some kind of digital technology in the classroom. Furthermore, 87% of respondents currently use educational digital games as part of their curriculum, with that trend expected to increase over the next few school years.



Clearly, the majority of educators who currently use digital games in the classroom plan on continuing that trend. Even more interesting: Among the 13% of educators who currently *do not* use digital games in the classroom, many plan on adding them to their curriculum in the upcoming school year. Specifically, 67% of educators who don't currently use digital games intend to use them next year: 22% will feature them regularly in their lesson plans, 41% plan on using them sporadically, and 4% intend to use them as a reward to incentivize students. See Figure 15.



The 13% of respondents who do not currently utilize digital games were asked if they plan on adding them to their curriculum.

FIGURE 15 IF YOU DON'T CURRENTLY USE DIGITAL GAMES, DO YOU PLAN ON ADDING THEM IN THE NEXT FEW SCHOOL YEARS?



Insight: Of those educators not currently using digital games in the classroom, 67% intend to add them to their curriculum in the next few school years, indicating that the rise of educational digital games will continue to accelerate.

Insight: Teachers believe there are a wide variety of educational benefits to digital games, with their ability to appeal to many different learning types commonly seen as the most impactful.



I would love to have more digital games that support the skills that my students need to learn.

– 4th Grade Teacher, Wright City, OK

I would love to see something [where] they can interact with each other in the classroom while playing.

– 4th Grade Teacher, Plains, PA

I think this sounds like a great idea! They have responded well in the past to games that let them earn points/coins that they get to spend on virtual things like designing a house, etc.

– 5th Grade Teacher, Reading, OH

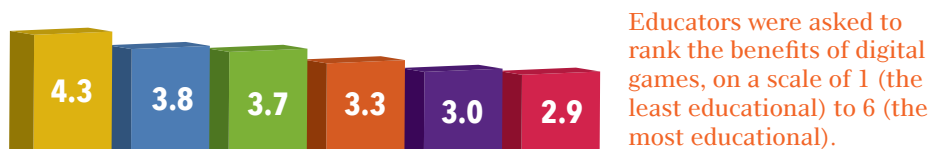
Scenario based instruction is very useful... This will make the scenario much more real and applicable to my students' lives.

– 5th Grade Teacher, Bedford, IN

Why use digital games in the classroom?

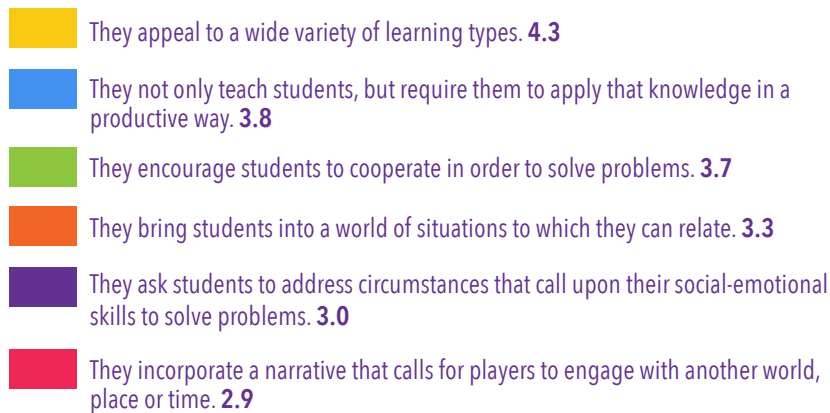
The data from our PEN survey confirms that educational digital games have become a major resource in K-12 learning, and that that trend will continue to increase. But it remains to be seen *why* digital games are so powerful at engaging students who might otherwise have little interest in certain classroom subjects.

While the specific benefits of educational digital games have been extensively researched and discussed, we turned to the K-12 educators that make up PEN and asked them to rank the positive aspects of digital games from their own perspective. Among the numerous benefits that respondents cited, one stood out as the most prevalent. When the average ranking for each educational benefit is calculated, based on a scale of 1 (the least important benefit) to 6 (the most important), the ability for digital games to appeal to a variety of learning types comes in first place, with educators ranking it a 4.3 out of 6. See Figure 16.



Educators were asked to rank the benefits of digital games, on a scale of 1 (the least educational) to 6 (the most educational).

FIGURE 16 RANK THE MOST IMPORTANT BENEFITS OF USING EDUCATIONAL DIGITAL GAMES IN THE CLASSROOM.



Even the lowest-ranking educational benefit had an average score of 2.9 out of 6, suggesting that some educators still viewed this as an important asset. In other words, there are numerous reasons to employ educational digital games in the classroom, and all of them were cited as having a positive impact on students.

This conclusion is also supported by teachers' written responses to our survey, which expressed interest in using digital games to educate students about a variety of real-life skills. A sampling of teacher comments can be found to the left.

How do digital games get into classrooms?

We've seen that the overall trend of using digital games in the classroom continues to accelerate, and that there are many reasons why they make such a powerful impact on students and teachers. But how exactly are such digital resources provided to schools, which in many cases have limited budgets to work with?

The vast majority of teachers – 76% – only use digital games that they don't have to pay for, which is understandable given the financial constraints on most classrooms in the country. In some cases, these games are provided by the school itself (this was true for 49% of our respondents); by a PTA/PTO (9%); or by an outside source, such as a community fund or private company (8%). A sizable number of educators (30%) provide digital games themselves, but we believe this is an unsustainable model because teachers are struggling with limited funds, and over time this will dissuade a large number of educators from using digital games when they might otherwise embrace them. See Figure 17.

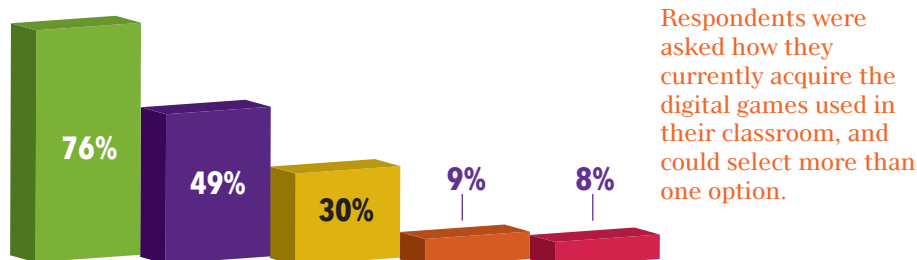
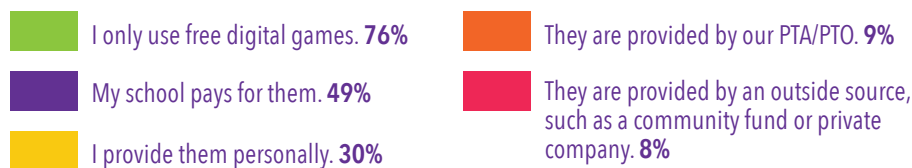


FIGURE 17 HOW DO YOU ACQUIRE THE DIGITAL GAMES THAT YOU USE IN THE CLASSROOM?



The importance of providing free digital games to schools becomes even more apparent when considering the reasons why educators don't use them. We asked the 13% of educators who currently do not use digital games why they don't employ them in the classroom. While a number of reasons were provided, about half of the respondents (51%) explained that they do not use educational digital games because their school does not provide them. As mentioned earlier, two-thirds of educators who don't currently use digital games claim that they would do so if they were made available, which makes their lack of access to free digital resources all the more significant.

Insight: If organizations sponsor free educational digital games for schools, they will be widely used by teachers who have a high demand for them.



Sources

¹ Rivera, Maricel. "Is Digital Game-Based Learning the Future of Learning?" *eLearning Industry*, August 3, 2016. elearningindustry.com/digital-game-based-learning-future.

² Zhen, Jeremy. "The History of Educational Video Gaming." *Immersed Games*, December 7, 2015. www.immersedgames.com/category/education/.

The future of digital games

In this second part of our PEN report survey, we dug further into the results by separating the data by grade level and technologies used. While the educational benefits and the ways in which digital games are acquired do vary depending on technology and grade level, the trends remain consistent: Teachers of all age groups, regardless of technologies employed, have embraced digital games' long-term impact and expect to continue doing so over the next few school years

In closing, we asked survey respondents if they have used digital games to teach K-12 students about a variety of important life subjects – including energy efficiency and electrical safety, financial literacy, health and wellness, and STEM learning – and also gauged educators' interest in using digital games to teach these topics in the future. On average, only 16% of educators reported using digital games to teach these subjects in the past, though 83% expressed interest in doing so in the future – suggesting an important educational market with high demand and low supply. See Figure 18.

Respondents were asked whether they have used educational digital games to teach about energy, financial literacy, health and wellness, and STEM subjects in the past, and also if they are interested in using age-appropriate digital games to teach these topics in the future.

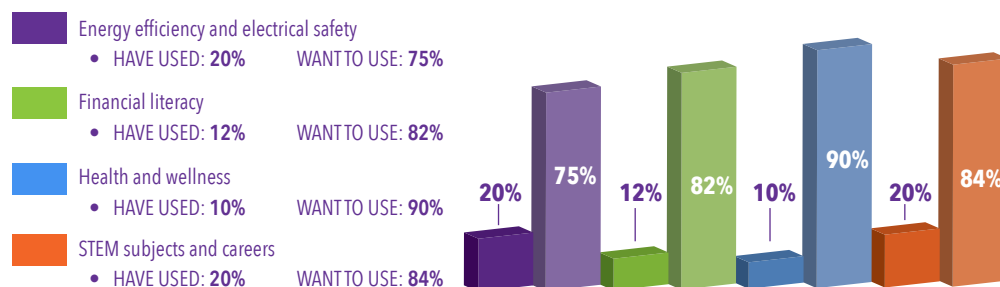


FIGURE 18 HAVE YOU USED EDUCATIONAL DIGITAL GAMES TO TEACH IMPORTANT LIFE SKILLS? WOULD YOU BE INTERESTED IN USING THEM IN THE FUTURE?



Insight: The opportunity for organizations to sponsor digital games and provide them to schools can make a lasting impact on students, educators, communities and, of course, the organizations themselves.

NTC is a premium provider of educational programming with operations in the U.S., Australia and New Zealand. We work directly between schools and clients to promote beneficial behaviors and life skills to students in grades K-12 on a local, regional and national level.

Since 1978, we have formed connections and helped develop relationships between thousands of schools and corporations, nonprofits and governmental organizations. Our value is not just in the impact we create; our turnkey services also change the lives and trajectories of students, mobilize parents and entire families with beneficial messages, and cultivate community-wide goodwill for clients.

Our award-winning educational programs are provided free for schools and are customizable to accommodate specific messages and goals for clients. Through formats including live performance, in-class discussion, graphic novels, print curriculum, and digital games and activities, we present topics such as energy conservation, safety, financial literacy, STEM, water and environmental stewardship, and health and social responsibility in ways that engage and empower students. In doing so, we are helping our clients to be forces of change for students, parents and communities.



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