Insights for educators

Learning with digital games

by Ryan Schaaf and Keri Engel
In partnership with Amplify

Amplify.

About the authors

Ryan L. Schaaf

@RyanLSchaaf

Ryan L. Schaaf is Assistant Professor of Educational Technology at Notre Dame of Maryland University and graduate faculty at Johns Hopkins University's School of Education. Before higher education, he was a school teacher, instructional leader, and mentor teacher. In 2007, he was nominated for Maryland Teacher of the Year. Ryan is the author of such books as, Making School a Game Worth Playing: Digital Games in the Classroom, Using Digital Games as Assessment and Instruction Tools and Reinventing Learning for the Always-On Generation: Strategies and Apps That Work. Reinventing Learning for the Always-On Generation received an IPPY Award for its contributions as a resource book for educators. His latest book, Game On: Using Digital Games to Transform Teaching, Learning, and Assessment is available now.

Keri Engel

@keriaengel

Keri Engel is a digital age learning advocate who is passionate about the effective integration of digital gaming in learning environments. She is a tenured educator in Baltimore City Public Schools where she is part of her school's leadership team, as their Instructional Technology leader and Student Learning Objectives ambassador. Keri recently graduated from Johns Hopkins University with a master's degree in Digital Age Learning and Educational Technology. She is currently employed as a JHU teaching assistant for a course on digital gaming in classrooms.

Learning with digital games guide

In partnership with Amplify

The power of gaming in the modern world is truly awe-inspiring. Each year, the gaming industry breaks all of its own records and metrics. From growth in sales to the broadening of its players' demographics, digital games have become a phenomenon of epic proportions. Now, many educational researchers, practitioners, and pundits have made the case for the use of digital games as potentially powerful learning tools.

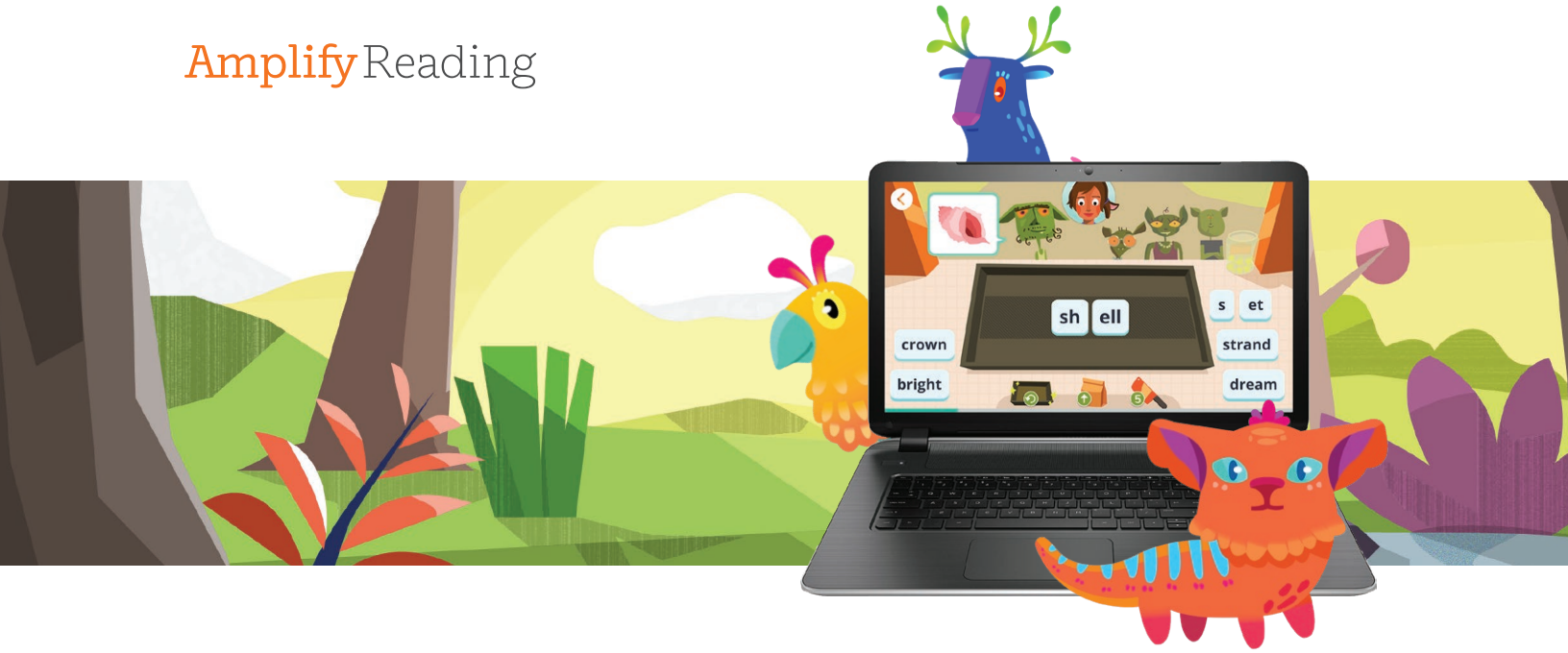
Digital games are highly interactive forms of media that put players in control of their own experiences. The subject matter and storylines present in games are quite diverse, allowing virtually any type of academic content to be explored or skill to be mastered. They provide constant feedback and allow players to learn through both their successes and failures.

This Learning With Digital Games Guide originated from a blog series published by Amplify with the purpose of using the largely untapped potential of digital games to deliver effective game-based learning experiences for the digital generations. This guide is an abridged version of the blog series chock-full of extra resources for educators either using, or contemplating using, gaming during instruction.

In this guide, parents, educators, and other stakeholders invested in the success of the digital generations will:

- examine the ubiquitous, pervasive nature of digital games and their grasp upon the digital generations;
- define the essential vocabulary associated with digital games, digital game-based learning, gamification, and other related terms;
- analyze the current research related to digital gaming and learning;
- compare and contrast the various platforms digital games are played on and their potential for individual, small-group, or large-scale digital game-based learning implementation;
- examine the criteria for selecting quality digital games for instruction;
- analyze the various ways digital games can be used by learners at home or incorporated into classroom instruction at school; and
- observe testimonials of digital game-based learning in various academic programs like Amplify Reading.

Amplify Reading



Amplify Reading is a supplemental K–2 reading program that will be used as an example throughout this paper.

The program includes:

- **An imaginative game world** that gives students agency over their progress and gets them excited about developing their reading skills
- **More than 40 games** covering foundational skills, vocabulary, and comprehension, with each game mapped to specific skills and standards
- **An integrated eReader** with more than 25 fiction and nonfiction texts, allowing students to apply learned reading skills to an authentic text
- **An adaptive algorithm** that guides each student along a personalized learning path
- **A teacher dashboard** with on-demand class usage data indicating each student's time spent on task, skill progress, and current areas of focus

To learn more about Amplify Reading, contact us at reading@amplify.com.

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Prequel

Digital Games: Learning Through Gameplay

Have you ever observed a person playing a video game? Have you ever witnessed the intense range of emotions, extreme task commitment, engagement, and focus players experience as they smash buttons and hold on to their game controllers for dear life?

Connor

My ten-year-old son Connor amazes me with his proficiency in playing games on the family game console or his tablet. I was guilty of starting Connor on this early path to gaming. At the ripe old age of 2, Connor was visiting ***Starfall.com*** to learn about phonics and letter recognition. This interactive site was the gateway to additional gaming experiences such as ***Angry Birds***, ***Fruit Ninja***, ***Star Wars Legos***, and most recently, ***Minecraft***.

What was truly amazing with Connor's gameplay was the amount of content he was learning. Connor discovered digital games had a lot to teach him. However, this type of stealth learning was a side effect. His main purpose for participating was because it was fun and immersive. Similar to educational books and videos, Connor considered games an educational media format—one that will continue to evolve in its presentation and message for its players for many decades to come. In fact, Connor's younger brother, Ben, is learning how to be a gamer. It puts some credence into the popular proverb, "the family that plays together, stays together."

Gaming Is Ubiquitous and Has Untapped Potential

Digital games are a powerful factor in the lives of so many people. Whether we observe a committed gamer playing ***Call of Duty*** or ***Halo*** more than 20 hours a week or a casual gamer playing ***Clash of Clans*** or ***Candy Crush*** in their spare time, games are an extremely popular form of media. As gaming evolves, its purpose is changing. Games are no longer considered just an entertaining pastime. A growing body of research (which will be shared in Chapter 3) is identifying games as extremely powerful tools for modern-day teaching, learning, and assessment.

Quality digital learning games also promote the development of soft skills that so many educational visionaries (**Sir Ken Robinson**, **Ian Jukes**, **Sugata Mitra**, **Tony Wagner**, and **Marc Prensky** to name a few) identify as being crucial for our children to develop in order to thrive in the modern world after their academic careers are over. During gameplay, players develop skills such as problem-solving, communication, perseverance, strategic planning, information processing, and adaptability, to name a few.

Try to envision a scenario where the members of the digital generation play to learn. They would take risks, work productively alone or in groups, strive to improve, focus on a single task for an extended period of time, fail without stigma, persevere through challenges, work toward short and long-term goals, and learn through experiences, rather than absorbing dry, unconnected facts. And the digital generations are doing all this while having fun during the process.

Today's generations have become experts at analyzing gameplay, interpreting storylines, and ingesting raw game data. If parents and educators could take advantage of gaming's popularity and positive attributes during learning, then education would become an epic journey for our children.

Many living in Connor's generation, the digital generation, will never experience a world without ***Mario***, ***Master Chief***, or ***The Sims***. Outside of schools, they play hours of video games each week. While playing these games in their spare time, they are extremely focused, they take on all challengers, work collaboratively, solve problems, receive instant feedback and gratification, and ingest and retain a large amount of information quickly with amazing accuracy during recall. If these attributes can be transferred to academics, then we will cultivate a generation ready to take on the world.

Chapter 1

The Power of Gaming: A Global Phenomenon

During sporadic times in my life, I would have labeled myself a gamer. I started with the classic Atari 2600 in the early 1980's (no old jokes, please). As I developed through my adolescence, the video game industry continued to evolve. The Atari 2600 made way for the Nintendo Entertainment System (NES), the NES made way for the Super Nintendo, the Super Nintendo gave way to the Sony PlayStation, then PC games, then the Xbox and so on.

Today, my children have access to a wide variety of game types on various platforms. Access is quickly becoming less and less of a barrier for gameplay. Although my boys and I enjoy a wide variety of activities, we love to play games together. Games, both digital and nondigital, are an incredible draw for children and families.

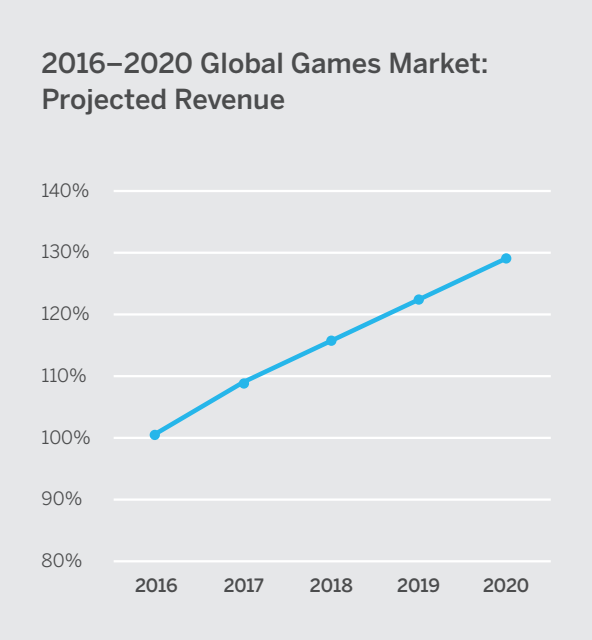
The Current State of Gaming

Playing digital games is an immensely popular form of entertainment. Simple real-world observations will attest to gaming's connection to our youth. Go to a restaurant such as *Buffalo Wild Wings* and the restaurant passes out tablets to its patrons' children to use. And on each tablet (besides germs and BBQ sauce) are digital games ready to engage children in gameplay, allowing their parents to have a conversation that doesn't involve *Thomas the Tank Engine* or *Ninjago*. This recurring pattern of turning over mobile devices to children is occurring everywhere. A quick scan at restaurants, in the backseat of cars, or in their own homes helps draw a simple, crystal-clear conclusion: our youth love to ingest media. "Seventy-two percent of children age 8 and under have used a mobile device for some type of media activity such as playing games, watching videos, or using apps" (Common Sense Media, 2013). These children, the members of the always-on generation, are growing up with hundreds of ways to consume and produce information using media.

The digital games of today are visually more appealing, contain better storylines, are developed using better technology, encourage both single and team gameplay, and are easier for new players to adopt than classic games from the past. Today's digital games are products of an incredibly powerful and awe-inspiring market that have helped spawn "a gaming culture".

The gaming industry is a booming and lucrative one. After all, there are between 1.75 to 2.1 billion people in the world that play games (Levin, 2017; McDonald, 2017). Over the years, the number of new gamers adopting the pastime has steadily increased as more and more countries embrace new technologies. Market research firm Newzoo projected global revenue would reach over 128 billion dollars by the year 2020, an overall compound annual growth rate of 6.2%. The mobile gaming sector accounts for about 42% or 46.1 billion dollars of this revenue (McDonald, 2017).

If we focus specifically on the United States, the data is quite compelling and convinces us that the old barriers and stigmas associated with gaming are rapidly disintegrating. First, 150 million or roughly about 59% of people in the United States spread



Source: Newzoo, 2017

over a vast variety of backgrounds, ages, genders, and socioeconomic statuses play games. About 65% of U.S. households are home to at least one person who plays 3 or more hours of video games a week (ESA, 2015).

Next, the preconceived notion that a gamer is a teenage boy playing in a dark basement at night all alone is no longer accurate. It's true that about 99% of teenage boys do play games at least weekly, that is a no-brainer for many of us to accept. However, the surprising statistic is that 94% of teenage girls also play games weekly (Lenhart, Kahne, et al., 2008). Here's a question to consider (No Googling): What is the average age of a gamer in the United States? 10 years-old? 15 years-old? Maybe 20 or 25? All wrong. The answer is 35 years old (ESA, 2015).

So, more and more people, young and old, boys and girls, novice and expert are jumping into stories, sending game requests through social media, fighting foes, traveling through time, and finding hidden objects in an ever-expanding global culture. A culture that is growing with no signs of slowing down.

Chapter 2

Setting the Record Straight: The Differences Between Digital Game-Based Learning, Gamification, and Other Related Buzzwords

As more and more educators consider using games in their learning programs, they must understand all of the nuances involved. Today, the buzzwords in education are gamification, play-based learning, gaming, game-based learning, and digital game-based learning.

There are some popular misconceptions about these terms. This chapter will set the record straight and give potential game-based learning facilitators helpful definitions for the terminology they may encounter. The following clarifying explanations help refine meaning and eliminate some of the frequent misconceptions.

Play

Play is a highly creative process, using both the body and mind. Its definition is flexible, and may or may not involve goals. Bruce (2011) describes play as, "a spontaneous and active process in which thinking, feeling, and doing can flourish; when we play we are freed to be inventive and creative. In play, everything is possible with reality often disregarded and imagination and free-flow thinking taking precedence."

Learning philosophies and educational theories—such as those set forth by Jean Piaget, Erik Erikson, and Lev Vygotsky—all recognize the value of children using play for self-teaching and its important role in a child's cognitive development. As parents and educators, we must provide our kids with more opportunities to play. After all, George Dorsey said it best, "Play is the beginning of knowledge".

Games

What exactly is a game? Have you ever tried to define what a game is? We know games come in many varieties and genres. Karl Kapp, Professor of Instructional Technology at Bloomsburg University, defines games as, "a system in which players engage in an abstract challenge, defined by rules, interactivity, and feedback, that results in a quantifiable outcome often eliciting an emotional response" (Kapp, 2012, p. 7). Futurist, author, and gaming guru Marc Prensky also dissected their components. Games have "rules, goals and objectives, outcomes and feedback, conflict/competition/challenge/opposition, interaction, and representation of story" (Prenksy, 2007, pp. 5–11). Whether simple or complex, single or multiplayer, or collaborative or competitive, games have many common characteristics:

- **Challenge:** the problem or scenario presented to the player to overcome.
- **Rules:** the structures, boundaries or freedoms provided to players during gameplay.
- **Interactivity:** the actions or processes players undergo during gameplay.
- **Feedback:** the reaction of player interaction. Feedback can provide rewards for successful gameplay or consequences for mistakes.
- **Conflict:** the in-game challenge, friction, or opposition between players, the game system, or rules.
- **Goals/outcomes:** Goals represent the player's end desired result. Outcomes represent the end results such as a win, lose, or draw.

Game-Based Learning (Digital and Nondigital)

The quick and dirty definition of game-based learning is simply learning through the use of games, both digital and nondigital. Game-based learning promotes a student-centered approach to instruction. This approach allows teachers to step out of the spotlight and become learning guides rather than the source of all information in the classroom. Many students today would rather not be lectured, or receive information from a single source. Rather, they prefer to acquire their knowledge from the readily available resources (digital and human) around them.

The games in Amplify Reading are a prime example of this approach—providing students with the opportunity to practice and build proficiency in early literacy skills within an engaging story that rewards students for their efforts. Amplify Reading's adaptive algorithm ensures that students follow a personalized learning path that teachers can monitor, but the game world and the adaptive engine are designed to put students in the driver seat.

"They understand how to play the games rapidly; they're complex enough to be challenging and simple enough that they can get through it and understand quickly, and there are enough games that they are perpetually engaged."

—Elementary school teacher, Brooklyn, NY

Gamification

Gamification (or what Jane McGonigal refers to as gameful design) is an emerging field of practice that involves the use of game design and mechanics into nongaming situations. We experience gamified situations like this everyday.

Have you ever played the **McDonald's Monopoly** game? Is buying a burger or milkshake a game? No, but creating a system-based mental construct that entices players to buy more food for the opportunity to win a million dollars sounds much more appealing.

Do you belong to the **Starbuck's Rewards** program that gives you a stamp for every soy-based latte you buy? How does this reward you? It provides the consumer with a free drink after so many purchased drinks.

Both of these consumer programs are popular examples of gamification.

Have you ever created a bracket for **March Madness**? Or raced a spouse to finish cleaning the house or running errands? Or read a story-based book that asked you to make a decision among a few choices? For example, should you visit the wizard, follow the path to the left, or cross the river?

Gamification has many structural elements. In the classroom, they may include the following (adapted from Kapp, 2012):

- **Creating a compelling storyline or narrative:** Powerful stories draw us in. When used in the classroom, gamification becomes a means of immersing students into an engaging narrative. Classroom imagination and storytelling spawn a new and exciting mental construct. Students are transported from their classrooms into a storyline. The content, assignments, assessments, and even the classroom procedures all take on the attributes of the storyline.
- **Autonomy:** In a game, players receive a great deal of power to make decisions and succeed or fail by their own choices. Educators must look for ways of placing the powerful decisions in the hands of their learners.
- **Mastery of skills:** Games allow players to experience them over and over again to master skills or review content. Repetition is a powerful learning strategy.
- **Immediate feedback:** Games provide both positive and negative feedback in a timely manner. This fast-paced response allows the players to adapt quickly and overcome learning challenges.
- **Collaboration:** Games promote teamwork and community. The individual needs of the players are replaced by a combined focus on common goals.
- **Competition:** Individual players or teams face conflict and challenges.
- **Problem-solving:** Games provide problems for the player to solve. The problems cannot be too easy, or the player will lose interest. If the game is too hard, then players will become frustrated and give up.
- **Differentiated learning experiences:** Games can progress from easy challenges to harder ones. They can offer the right level of challenge based on the current skillset or ability of the player.
- **The use of badges, points, and leaderboards:** Games often provide players with data to determine how they are progressing. Badges, points, and leaderboards are a few examples providing feedback to the player. Although these mechanisms are often lower-level strategies, they are easy to implement and augment a gamification initiative when combined with other strategies (as listed above) (Schaaf, Mohan, 2016).

Game-Based Learning vs. Gamification

Game-based learning and gamification are not the same. Although each of these strategies has the potential to invigorate learning, game-based learning and gamification are distinctly different approaches to teaching, learning, and assessment. Remember, game-based learning involves the player learning or reviewing content or developing skills as they play a game. Gamification or gameful design involves the use of gaming elements in a non-gaming scenario. The graphic below, provided by our friend Steve Isaacs, summarizes the differences between the two terms. Of course, how the educator uses the game, or bits of a game, in the context of learning will truly make the distinction between both strategies.

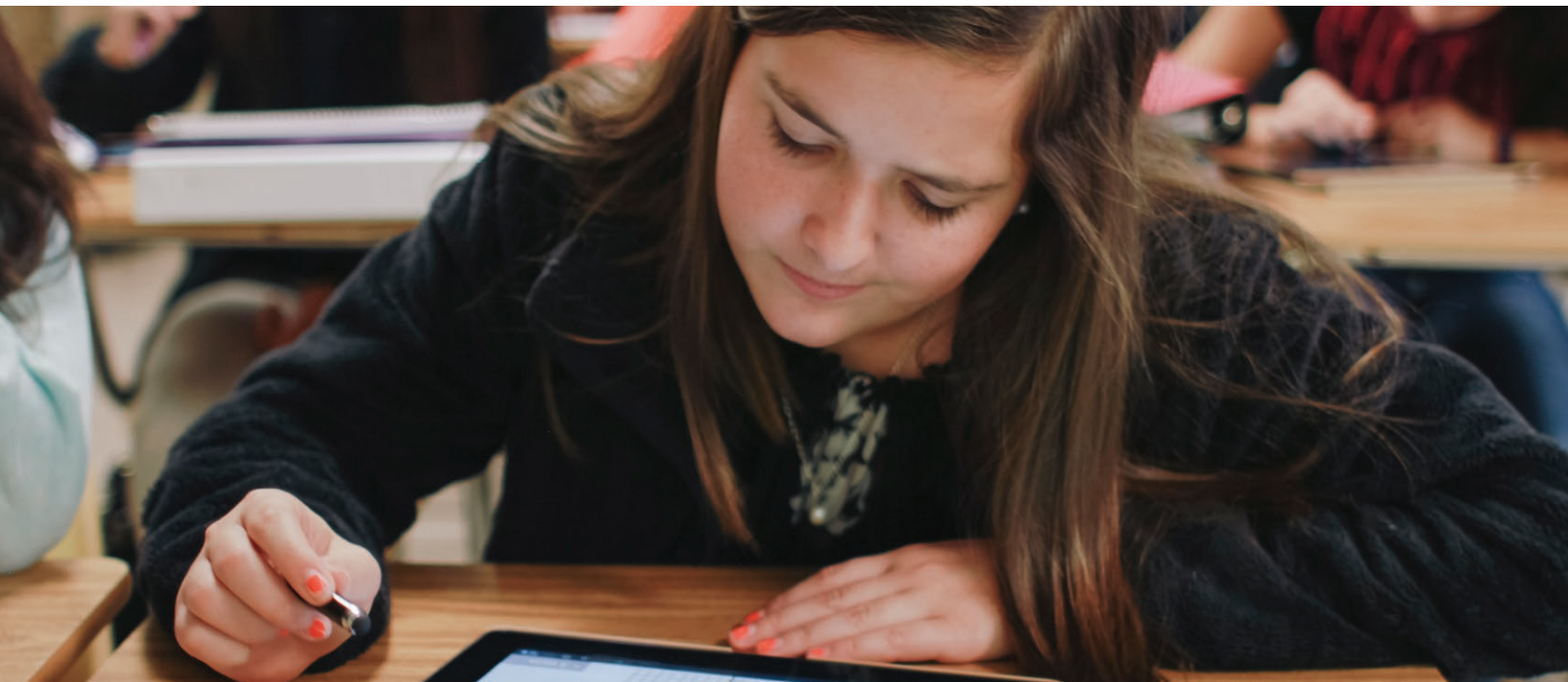
Chapter 3

The Research Supporting Digital Gaming and Learning

There are literally thousands of research studies, books, web articles, and news reports examining the effectiveness of games during the learning process. Some of these sources are research-based; some are first-hand experiences or accounts, while others are formed on opinions or even sophistry. The truth in the analysis of gaming's efficacy during the learning process is still evolving.

As often as we witness the digital generation's love of games and the amazing societal, technological, and cultural impact they usher in, there remains the need for evidence of their success as learning tools, or even learning environments.

Does playing games, both learning and commercial, both digital and nondigital, both long-form and short-form, promote learning? There is a substantial amount of research on gaming and learning. The first part examines what scientists, researchers, and educators have observed about the relationship between digital gameplay and the human brain. The second part examines many of the recent studies and analyses that demonstrate the potential for learning with the use of digital games. The links and citations for each study, report, or data source will be at the end, in the References section.



The Gamer's Brain

It is essential for educators and researchers to explore the human organ responsible for learning—the brain. Learning during the gaming experience provides information and experiences in a manner that promotes brain-based learning.

First, gameplay accesses many regions of the brain associated with learning. When gamers engage in gameplay, they receive information through their eyes and into their occipital lobes. This region of the brain is associated with visual perception, color recognition, object movement, reading and comprehension, and depth perception. Daphne Bavelier, professor of brain and cognitive sciences, notes that fast-paced, action games can retrain the visual cortex to gain a better understanding of the visual information it receives (Achtman, Green, & Bavelier, 2008). Video game play also augments grey matter in brain areas crucial for spatial navigation, strategic planning, working memory, and motor performance (Kuhn et al., 2014).

As humans, we are all inherently visual learners (with the exception of individuals with visual disabilities). The human eyes are nature's greatest cameras. They collect 72 gigabytes (the size of a computer hard drive in the early 2000's) of information every second. Human eyes contain 70% of our body's sensory receptors (Cartier-Wells, 2013), which allows them to process the meaning of images 60,000 times faster than that of text (Burmark, 2002). The digital game experience uniquely accesses visual learners, because, in most games, it is the main method of information transfer to the player.

Additional human senses and brain regions are extensively accessed during digital gameplay. Information received or transmitted through sounds are processed in and routed through the temporal lobes, which are associated with auditory processing, language comprehension, memory, and speech.

Digital games do an amazing job of transmitting high-quality, highly expressive, realistic, multisensory experiences—sight, sound, and touch (and likely in the near future smell and taste). They provide gamers with experiences more immersive than watching a video or listening to audio. Gamers are engaged in these virtual worlds and their appetites to learn and explore are incredibly ravenous.

In the past, the brain was believed to be composed of an unalterable, unchanging structure. However, the scientific community has discovered that repetitive experiences can alter the brain's structure and rewire it. "Neuroplasticity is the process of ongoing reorganization and restructuring of the brain in response to intensive inputs and constant stimulation" (Jukes, McCain & Crockett, 2010). Video games provide these repetitive situations and experiences across the different game types, platforms, and genres. They provide constant stimulation for students to learn from using multiple forms of sensory input such as auditory, visual, and kinesthetic (Schaaf & Mohan, 2014).

The challenging nature of games also makes learning with them particularly rewarding. Dopamine, a neurotransmitter that is associated with intense pleasure, is released as a reward in response to conquering a challenge such as making a prediction, choice, or action, and receiving feedback that it was correct. Gamers want to repeat this neurotransmitter release, so they advance through more challenging experiences. Unfortunately, if a challenge is too easy, then the Dopamine release doesn't occur, and the player loses interest in the game (Willis, 2011).

Digital games have the potential to provide powerful learning experiences to the gamer's brain. They transmit visual, auditory, and even tactile information in a compelling manner, so more regions of the brain are accessed during gameplay. They provide information in a manner that helps to restructure (and even retrain) the human brain neurologically. Finally, gameplay offers the opportunities for the brain to reward perseverance, tenacity, and learning through conquering challenges with a pleasurable neurochemical release.

Knowledge Gains

In a meta-analysis (an analysis of many studies) conducted in the Journal of Educational Psychology, Wouters et al. (2013) found that training with serious games is more effective for developing knowledge, knowledge retention, and cognitive skills than other instructional methods such as lectures, reading, drill, and practice, or hypertext learning environments. These results were further supported by Vogel et al. (2006) in a similar analysis, as they observed higher cognitive gains in simulations or games as they did in traditional instructional techniques. Similar knowledge gains were evident in analyses conducted by Wolfe (1997), Sitzmann (2011), and Ke (2009). Digital games have the potential to transform information for its players into valuable knowledge and experiences.

Motivation to Learn

Student motivation is another powerful attribute that makes learning through gameplay that much more alluring. Thangagiri and Naganathan's (2016) study explored if games affected student motivation. Their data analyses found that using a gaming approach was both more active in stimulating students' knowledge and more motivational than a non-online gaming approach. In another qualitative study conducted by Yu and Hsaio (2011), students' learning motivation was a significant factor in knowledge acquisition during gameplay. These results were further supported by another participatory action research study conducted with learners ages 8 to 10 years of age. The data suggests digital game-based learning experiences were as effective in the classroom as other research-based instructional strategies when measuring student motivation and time-on-task behavior. (Schaaf, 2012) So, regarding instructional strategies in a learning environment, game-based learning motivates and engages learners just as much, if not more, than other tried and true instructional approaches.

Building on this research, Amplify Reading was designed with student engagement at its core. When a student first logs into Amplify Reading, they discover a magical creature called a Curioso that serves as their companion through learning to read. Through mastery and effort in skill-focused minigames, students earn rewards and powers for their Curioso and progress through their individualized learning path, all wrapped within a captivating storyline. As students play the individual games, they not only make gains in skill development, but they also progress through the overarching narrative of the game world.

"My students are very invested in Amplify Reading and look forward to using it. They like the interface and curiosos."

—First grade teacher, Washington, D.C.

Attention, Attention!

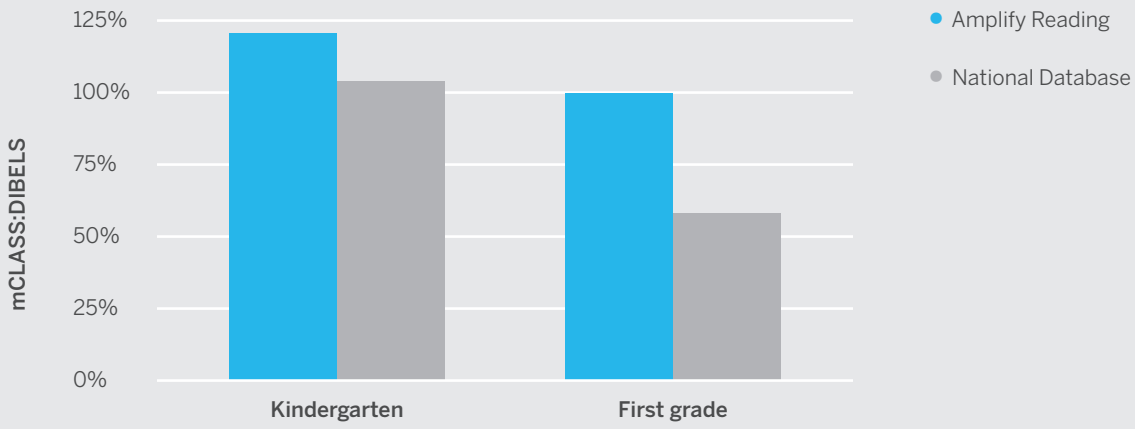
The attentional benefits resulting from the use of digital games seems to be the most research-supported. Many studies performed by researchers such as Bavelier, Green, Dye, and others showed improvements in attention, optimization of attentional resources, integration between attentional and sensorimotor areas, and improvements in selective and peripheral visual attention (Paulus et al., 2017). Boot et al. (2008) explored similar variables in their work and found participants improved in task switching and visual tracking. In summary, evidence suggests video game players show improvements in selective attention, divided attention, and sustained attention. Finally, McDermott, Bavelier, and Green (2014) observed their research participants showed evidence of greater speed of processing and enhanced visual short-term memory when compared to a control group.

Skill Builders

There are numerous studies that explore the relationship between problem-solving and game play. After all, most games have a problem or challenge for the player to face and overcome. The researchers assessed their problem-solving ability by examining the types of cognitive, goal-oriented, game-oriented, emotional and contextual statements they made. They found that younger children seemed to create short-term goals as they played games, while older children examined the problem as a whole (Blumberg & Ismailer, 2008). Well-designed, content-deep games supported in-depth learning, as well as developed investigative, critical-thinking, and problem-solving skills. (Clark et al., 2017). Games are also ideal for skills acquisition and retention.

As for student achievement, many studies support that games contribute to academic success. They can increase scores on achievement tests (Posso, 2016) and improve learning achievement (Hwang, Wu, & Chen, 2012; Sitzmann, 2011).

Growth in mCLASS:DIBELS Next Composite Score Sep–Jan



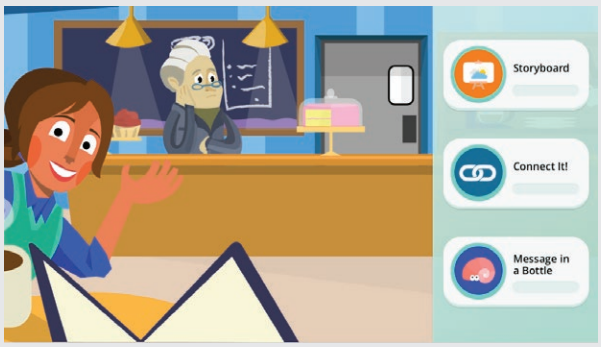
Preliminary analysis based on Amplify Reading use offers further evidence that game-based learning leads to increased student achievement. On average, students playing Amplify Reading from September 2017 to January 2018 showed greater gains based on a standardized measure of early reading skills, versus students from a very large database of same-aged children who did not use Amplify Reading during that period. See the full efficacy results **here**.

Learner Ownership and Agency

Students learn better when they assume ownership of the process, take the initiative, and direct their own learning (Savery, 1998). In a literature review conducted by Nousiainen and Kankaanranta (2008), learners that succeeded through gameplay felt ownership in the final outcome, meaning they felt responsible for their learning and accomplishments.

Student agency refers to the degree of freedom and control that a student has to perform meaningful actions in a learning environment. Dalton (2000) reported that 56% of students who participated in online courses sensed a lack of interactivity; they were not active learners with the freedom of choice. Well-designed games, however, encourage students to adapt and design learning and teaching styles most suitable to them, which in turn leads to a more active role in learning (Klopfer et al., 2009). Sawyer and colleagues investigated the impact of student agency on learning and problem-solving behavior in a game-based learning environment. They found that students showed significant learning gains when offered the freedom and control to learn on their own with some guidance. Game-based learning practitioners should allow learning to take place in an environment that provides freedom and ownership for learners.

This approach of guided choice is reflected in Amplify Reading's design. Although the overarching narrative in the game world is the same for each student, their journey through the quests in Bookerton are unique to their individualized learning path. Each quest presents a subset of games and challenges students to master content sets in those games. Within this curated selection of games, students have the freedom to choose the order in which they play the content and the opportunity to practice multiple skills in tandem.



"Having student engagement in Amplify Reading is helpful because children have the opportunity to have ownership of their own learning, get help making decisions, and want to learn more. And if the kids want to learn, it's so much easier to teach them."

—Second grade teacher, East Haven, CT

Chapter 4

The Landscape of Digital Learning Games: Finding Paydirt

There are a wide variety of digital games available for players on countless platforms. It makes it very challenging to find a game for a specific purpose such as learning. The first step is to understand the purpose of gameplay. Typically, a person engages in gameplay for fun and entertainment. However, in recent years, more and more people are playing games for unconventional purposes. Some gamers want to build mindscapes using digital resources, some want to learn new concepts or cultivate new skills, some use games just to pass some downtime, and some are immersed in game-based storylines and narratives.

Regardless of the purpose for playing them, finding games to meet these various needs is a challenge. The process remains decentralized—there is no one-stop shop or catalog to research. However, self-research is a practical strategy to find a potential game.

What follows is a list of potential gaming platforms to use in class or at home. Each platform is given a number of stars (1 to 4, with 4 being the most difficult to integrate into instruction) and money signs (1 to 4, with 4 being the highest cost for classroom adoption).

Web Browser–Based Games ★ $

There are tens of thousands of digital learning games available online at this very second. Educators can perform a simple web search for content-specific games to infuse into their lessons. For instance, imagine a group of science students learning about life cycles. A teacher simply conducts a Google search using a query such as "Interactive life cycle games for kids" to find hundreds of potential games for students to use. Since most schools already have many digital devices, browser-based games are the easiest to adopt into instructional lessons.

For this reason, Amplify Reading is browser-based and can be accessed on computers, chromebooks, iPads, and even smartphones so kids can learn anywhere.

There are also large collections of digital games referred to as game hubs. These sites house many different types of digital games tailored to many different ages as well as content areas. Below, is a short list of online learning game hubs for educators to consider for use in lessons, as resources for technology learning centers, or as support or extra practice at home.

Game Hub

ABCya
Arcademic Skill Builders
BrainPop
FunBrain
Games for Change
iCivics
Jump Start
Mr. Nussbaum
Nobel Prize
PBS Kids
Poptropica
PowerMyLearning

Steam ★★ $$

Steam is an enormous online-gaming platform. Steam hosts a massive online catalog of over 5,000 games for PC, Mac, and Linux-based computers, mobile devices, and even smart televisions.

"Apptastic" markets ★★ $$$

The eruption of application or 'app' markets has created a digital gold mine of potential games for learners. It is hard to fathom that this multi-billion dollar a year market is not even a decade old. The two major app markets are Apple's **App Store** and **Google Play**. The App Store serves Apple's operating system (iOS) devices such as the iPhone and iPad. Google Play supplies apps to smartphones and tablets using an Android platform. Both app markets have their very own categories for educational games. With thousands of games spread across numerous mobile platforms, the app markets are extraordinary sources to find potential games for tablets and smartphones.

Personal computer (PC) games ★ $$

Although the download-and-play approach to acquiring new digital games is now popular because of tablets, smartphones, and web-connected computers, PC games are still very popular in classrooms. Schools are still hosting computer workstations and common technology labs to cater to the hundreds of students that require digital learning in their curricula.

Game consoles ★★★ $$$

Gaming consoles are one of the last platforms teachers would consider using as learning tools for their students to access highly-interactive virtual learning environments. Teachers are repurposing gaming consoles and using them as instructional workstations rather than as entertainment systems. With careful consideration, gaming consoles and devices have a lot of potential for classroom learning applications. Many learners have these same gaming consoles at home, so they already know how to use them.

Resources to Find Good Learning Games

Common Sense Media

https://www.commonsensemedia.org/lists/free-educational-apps-games-and-websites

Common Sense is the nation's leading nonprofit organization dedicated to improving the lives of kids and families by providing the trustworthy information, education, and independent voice they need to thrive in the 21st century. They review numerous games for use by both educators and parents.

Games 4 Change

http://www.gamesforchange.org/learn/game-databases/

Games 4 Change has accumulated numerous databases of potential learning games for players, educators, and parents to consider.

Playful Learning

http://playfullearning.com/

Playful Learning is a project of the Learning Games Network, an award-winning nonprofit producer of games for learning.

Digital Learning Game Database

http://bit.ly/DigitalLearningGameDatabase

The InfoSavvy21 team collaborated to create the Digital Learning Game Database (DLGD). It was conceptualized to archive and curate digital games with learning potential and provide it to educators for use with their students.

Chapter 5

The Criteria for Selecting and Using a Game for Learning

How do educators and parents sort through the thousands of games and platforms currently on the market to find something the digital generations will love to play and learn from?

Chocolate-covered broccoli

Not all digital learning games are created equal. Although the gaming market is saturated with potential titles, many fall short in quality or academic rigor. The learning game community has a label for games such as these: chocolate-covered broccoli. The term refers to masking skill and drill, oftentimes didactic activities with the promise of fun, excitement, and adventure for its players. Although on the outside, these chocolate-covered games seem like a sweet, delightful treat, on the inside, the player is swindled. Collectively, the learning game community has no problem with broccoli. However, there is no amount of chocolate, nor Ranch dressing, nor even cheese that can transform broccoli into something different.

As explained by educational thought leader Jordan Shapiro (2014), "The best learning games teach in the same way good teachers teach: They don't trick students into being interested, they help students find genuine excitement in learning a subject" (p. 20).

That's why Amplify Reading's game system is centered around the concept of a Curioso, a companion creature whose powers expand as students grow into ever-more confident readers. The learning is not masked (or chocolate-covered), but is at the core of what motivates students to engage with the program.

"As their Curioso grows and gets more powerful and able to do more things, that's what students feel as well. And that's how they are growing inside in what they're doing. So their confidence is growing. And once a child's confidence is there, the sky's the limit."

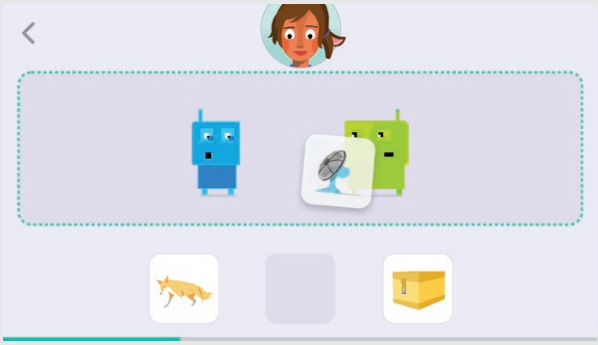
—Second grade teacher, East Haven, CT

Mixing Excitement With a Purpose

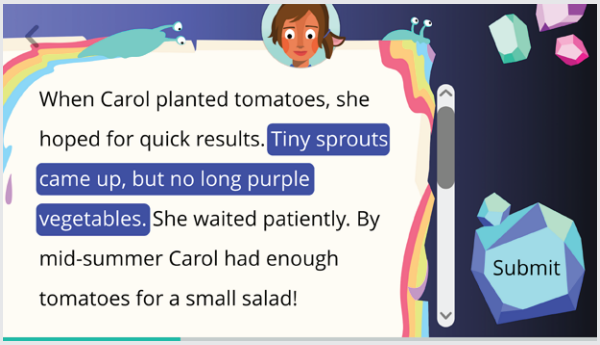
When finding a potential learning game, educators and parents must always begin with the end in mind: What do you want the players to learn? For parents, they must consider if the game is helping to teach or reinforce learning. For educators, this process involves consulting with their various curriculum guides or academic standards. From the standards, educators create a learning objective for their students and identify the tools and resources essential to help them achieve these goals. Next, educators consider what instructional and assessment strategies to employ to reach all learners.

Each game in Amplify Reading is mapped to specific skills and standards to ensure that the experience is both rigorous and riveting.

Download the full scope and sequence **here**.



In *Gem and Nye*, students practice blending sounds into words. They listen to word parts and must blend the parts to select the picture that represents the whole word.



In *Sloppy Scrolls*, students act as editors and identify inconsistencies in different passages. This helps to ensure that they are actively monitoring what is happening in the text, and not just decoding the words without understanding how they connect.

"The students were engaged and enjoyed the activities. They were practicing standards based skills, and mastering them."

—Third grade teacher, Bedford, IN

Planning Backwards

For educators, one of the easiest ways to prepare for a game-based learning activity is to find a game first, and then plan the learning events around its game play. Planning backwards such as this may seem nonsensical to educators, but the simple fact is that a lot of digital games were not constructed with the purpose of being used in a classroom during a lesson. Educators using game-based learning must consider what they are teaching to students and find a game that aligns with the desired learning outcomes.

Teaching or Testing?

The next consideration for evaluating and ultimately using a digital game for learning is to identify if the game is a teaching game, testing game, or both. Karl Kapp, an instructional technology professor at Bloomsburg University and a pioneer in the field of using digital games and gamification in learning, states that there are two types of games. "Testing Games are games where the learner already needs to know the information to be successful. The focus of the game is not to apply knowledge but rather to recall knowledge . . . If you want to test knowledge, testing games are fine but do not expect learning to occur" (Kapp, 2013).

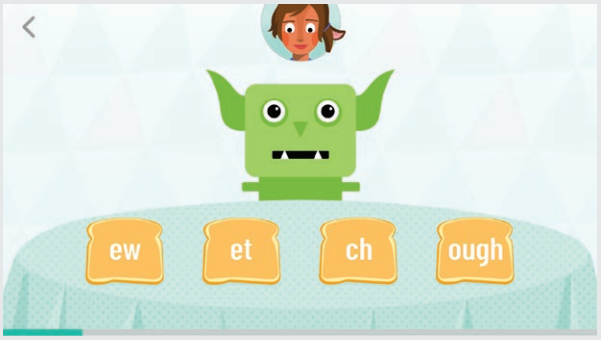
The second type is teaching games: "Teaching games, on the other hand, do not test knowledge; they impart knowledge. This is accomplished through a series of activities within the game that teaches the learner what he or she needs to do" (Kapp, 2013).

These game classifications become invaluable for educators considering the use of a digital game during the learning process. Educators must select a teaching game to teach their students and a testing game to assess or reinforce previously learned information.

Educators must conduct extensive searches for games that align with their student's learning goals. It is important to consider how the game will be used during the learning process. If students need to learn new information, then educators must locate a teaching game. A testing game would be ideal for assessment or a review of previously-learned concepts. Differentiating the two game types is fairly straightforward. If the content is introduced to the player, then the game is most likely teaching. If the game starts to ask questions and expects the player to know the answers from the very beginning, then that particular game fits neatly into the testing category.

More and more learning game developers understand that games must both teach and test its players. This is why they are starting to create more games that are classified as both, teaching and testing.

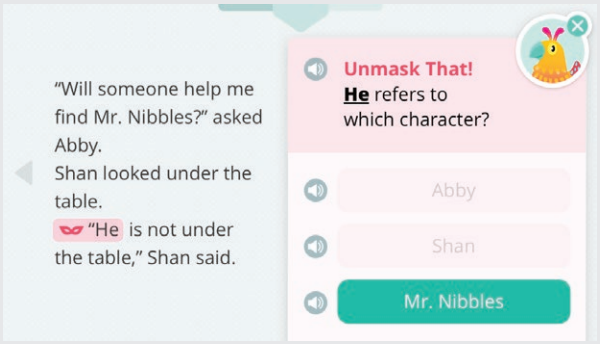
Reflecting this merged approach, the games in Amplify Reading are designed to reinforce key literacy skills through both practice and instruction. Students must demonstrate mastery of content in each level to unlock the next (i.e., testing), but each game has specific in-game instructional support for students who are struggling with the content (i.e., teaching).



For example, in *Grumpy Goblins*, students learn sound-spelling correspondences for consonant digraphs and vowel teams by listening to a sound from a goblin and feeding it the piece of toast with the corresponding letter or combination.

If they struggle with a sound, the game sends them into an instructional loop that provides additional instruction and examples of words that begin with that target sound.

As another example of this merged approach, Amplify Reading unlocks books with embedded activities that integrate familiar interactions from games that students have just played. These integrated e-reader activities are presented to the student at exactly the right point in their development when the program's adaptive algorithm determines they should be able to take the skills they have learned and practiced in games and apply them in authentic text.



Planning and Preparing for a Digital Game-Based Learning Experience

While keeping student learning outcomes in mind, educators must play available digital games and reflect upon the questions in the checklist below to determine which game is ideal for instructional integration.

Learning Outcomes and Pedagogy

- Does gameplay support learning objectives/outcomes?
- Can you use multiple games during instruction to address more or all of the standards?
- Is gameplay realistic and does it involve skills that are useful in the real world?
- Will the game challenges evolve with better player performance?
- Is the game fun, engaging, and challenging for players?
- Is one game better aligned with the expected learning outcomes than the others?
- Will gameplay address other learning outcomes to obtain a multi-disciplinary experience for the students?

Assessment

- Does the game contain assessment tools or performance measurements to provide users and instructors with player feedback?
- Can the game-based facilitator incorporate reality-based assessment strategies, measuring knowledge attained during gameplay?
- How might the game be incorporated into classroom instruction or assessment?

Technical Aspects

- Is the audio-visual presentation of the game clearly visible and audible, and does it provide an appealing aesthetic experience?
- Are there enough game stations to promote a low enough student-to-game ratio?
- Are appropriate peripherals and accessibility tools provided to each game station for the gaming experience?
- Is the game control or manipulation transparent, intuitive, and logical for players?
- Is the digital game content appropriate for the students' academic and/or maturity level?

Chapter 6

For Parents: Digital Games—Distraction or Learning Tools?

Today, many parents struggle with complex dilemmas as they try to raise strong, vibrant kids and mold them into empathic, global citizens. One such contemporary quandary involves identifying the place of games in their children's lives. This section provides some pragmatic advice to help parents make up their minds about games.

Screen Time: The Great Debate

The debate rages on about screen time and its effects on the digital generations. Some **sources** claim that too much screen time among preteens can affect their ability to read human emotions. Others, such as **this article** from the Mayo Clinic, link an overabundance of screen time to childhood obesity and irregular sleeping patterns. These issues are concerning and do raise some red flags. However, there is also concrete research showing some forms of screen time can **positively impact a child's psychological development**, can help them **learn and retain new content**, and can foster **creativity, problem-solving, and discovery**.

The American Academy of Pediatrics (AAP) has recently published new suggestions for families to practice a healthy media diet (AAP, 2016).

- For children younger than 18 months, avoid the use of screen media other than video-chatting. Parents of children 18 to 24 months of age who want to introduce digital media should choose high-quality programming, and watch it with their children to help them understand what they're seeing.
- For children ages 2 to 5 years, limit screen use to 1 hour per day of high-quality programs. Parents should view media with children to help them understand what they are seeing and apply it to the world around them.
- For children ages 6 and older, place consistent limits on the time spent using media, and the types of media, and make sure media does not take the place of adequate sleep, physical activity, and other behaviors essential to health.
- Designate media-free times together, such as dinner or driving, as well as media-free locations at home, such as bedrooms.
- Have ongoing communication about online citizenship and safety, including treating others with respect online and offline.

Games: A Natural Method of Learning

Games are perhaps the most natural vehicle for learning. If you look at the animal kingdom, you see puppies pouncing on each other with wagging tails, kangaroo joeys boxing, and river otters sliding down a mud bank. Humans spend most of their childhood learning through gameplay. Jean Piaget, a Swiss psychologist and philosopher developed the theory of cognitive development. He observed that play, as a vehicle for human development, was one of the most important functions of childhood. He theorized that play creates a relaxed atmosphere for learning to occur. Humans use play to understand social dynamics, exercise imagination and creativity, and experiment with materials and resources. Now, fast-forward to the digital age. Humans are still exploring these facets of cognitive play. The tools and resources humans use may have changed with technological innovation, but the cognitive skills and processes continue to be utilized in today's gameplay.

Learning Through Failure

Karl Kapp made this observation about the benefits of failure in games: "In games, unlike many other activities, exploring failure and what it means is a valued approach. Players enjoy failures in a game, or at least use them to progress" (2012, p. 48). In general, digital and nondigital games provide a breeding ground for perseverance. Life is filled with difficult trials: job loss, death, economic woes, and self-doubt. Gameplay helps to hone the attitude of, 'if you fall down, then get back up, dust yourself off, try again and move forward'. Failing forward, as many games perpetuate, helps cultivate perseverance, grit, resilience, and goal-setting.

Media Mentors

Parents make hundreds of decisions a day for the betterment of their children. Nowadays, with the proliferation of digital devices and the presence of the digital landscape, parents must use their best judgement when setting guidelines and establishing boundaries regarding screen time with their children. As a practical takeaway, parents must be media mentors for their children. They can monitor and restrict media use when needed, evaluate content, and help their children maintain a balance of both digital and nondigital experiences.

Chapter 7

Digital Gaming and Learning

So far, we have explored numerous questions about gaming and learning. We started by asking how a phenomenon such as gaming has garnered such global appeal. We defined the terminology and buzzwords currently floating around in an attempt to reduce commonly-held misconceptions. We examined past and current research associated with learning with the use of games to underpin our efforts. We also covered how to look for and evaluate potential games and offered advice for parents about gaming's hidden potential for learning with some guidance to consider. Now, it is time to explore some potential strategies for incorporating games into a learning activity. What follows is a list of potential ways and suggestions to go along with each method.

The Warm-Up

For decades, warm-ups and lesson motivations have kick-started classroom lessons. These warm-ups could involve a teacher or student-led discussion, an entrance ticket, a Q&A session, a video, a demonstration, an experiment, or some other event to pique the interests of learners. Educators can easily have learners play a digital game to start a lesson. The allotted time should be relatively short—perhaps 10 to 15 minutes. During this time, educators help gamers uncover the purpose of gameplay by asking questions to activate prior knowledge and connecting the embedded concepts to the expected learning outcomes for the lesson.

No Quarters Needed for This Gameplay

Free play allows gamers to explore digital games without constant interference from educators. Ultimately, learners are given free rein to explore, fail, retry, reflect, and learn from the game in an unstructured learning environment. The educator circulates the learning environment and carefully observes each gamer as they play to learn. During their observations, educators can record what they witness during their students' gameplay and assist any learners that are struggling.

The educator can select an effective follow-up activity for learners to demonstrate their mastery of the content. These activities could include classroom discussion, creative writing, journaling, blogging, creating a multimedia product, or participating in a simulation or role play.

Learning Centers Reborn

A learning center is a self-contained section of the learning environment in which learners engage in independent, self-directed learning activities. As more and more digital tools enter classrooms, centers have taken on a new look. A center can provide both digital and nondigital tasks. Since most digital learning games teach the players how to play, the teacher is typically not needed or acts as a guide on the side if there are difficulties or questions.

A Versatile Learning Approach

Not all students work at the same pace. Often, transition time, where students may be waiting for the next activity, must be accounted for. This situation can occur when a student is confused by the content and is waiting for assistance from the teacher, or when a student has completed all their work early. Games have the potential to be used as challenging, enrichment work for learners that have finished their main lesson work early. Games can also be used as an intervention strategy for struggling learners without isolating them from the rest of their learning community.

"Amplify Reading is a top choice for my students, who see it as a fun way to learn or review concepts. They ask to play Amplify as their early finisher activity almost every day."

—First grade teacher, C.C. Wright Elementary, North Wilkesboro, NC

Today's generation of learners are transfluent, meaning their physical lives and digital lives are so effectively integrated that switching from one to the other is second nature (Schaaf & Mohan, 2016). Many games offer a flexible and adaptable level system so the student is never experiencing something that is too difficult or too easy. By integrating digital games into our instruction, we can offer individualized education for each student and at every level. This can add a modern element to small-group instruction and provide an easy transition for our early finishers. The use of computer stations, Chromebooks, tablets, or even a device brought from the student's home, will allow students to easily access digital games during these transition times.

Amplify Reading is a prime example of a program with an adaptive level system that can offer individualized instruction for each student. Because students are set on a personalized learning journey through the more than 40 games in Amplify Reading, teachers can direct students to the program for independent practice while feeling confident that students are practicing content that's right for them.

"The students love it. It's engaging and provides differentiation for the many levels in my class."

—Second grade teacher, Taos, NM

Player One or Player Two

Many curriculums and school districts require teachers to meet with small learner groups to teach or reteach skills. One of the challenges many teachers face is how to keep the remainder of the class engaged in meaningful work that doesn't require direct help from the teacher. Some common challenges are that the work is finished too quickly or the work is too challenging. This leaves many learners asking what they should do next. Since teachers are often working with a small group of learners, they want to avoid constant interruptions or distractions. Digital games are a great way to provide these students with engaging, self-regulated, meaningful work. They can either work independently or with a partner using a variety of games (both digital and nondigital). To ensure that students feel comfortable with the material and the technology, have learners keep a game diary, perform a self-evaluation, or complete a journal activity to document their progress. Many games even offer the teacher progress monitoring to check that students are completing the work effectively and determine if the gameplay is too easy, too challenging, or just right for the player.

A Learning Event

Digital gaming offers a real-world application for many concepts. Often, games mimic real-life situations in a way that traditional work assignments cannot. Providing our students with the freedom to try, fail, reflect, and try again while exploring class content is a valuable opportunity.

Lessons in the traditional mindset of school are made up of sequential, step-by-step events that connect together. The various instructional events guide learners through a progression from the beginning to the end of instruction. The different types of events vary greatly: discussions, projects, observations, journal entries, experiments, reading passages, watching videos, listening to podcasts... The list goes on and on. Playing a game can easily be added to this list of potential learning events during the lesson.

A short form game, one that is easy to pick up and master in a short period of time (Schaaf & Mohan, 2017), is a great alternative to the typical paper and pencil tasks performed during a lesson. As students are playing the game, the educator circulates the room to ask questions, helping students to recognize their purpose for the gameplay. After giving students time to explore gameplay, the teacher brings everyone together to conduct a reflection. Students should receive guidance in making connections to past and future lessons.

Anticipation and Play-Based Learning

Learning through play and discovering knowledge on their own come naturally to children. This is especially true for learners who are born as members of the digital generations. By providing our learners with an authentic learning approach such as game-based learning, we are tapping into their inquisitive side. We can encourage them to learn by providing them opportunities to solve problems, make new connections, learn through trial and error, set goals, and persevere through exploration. Play-based learning is utilized frequently in the primary grades and less so at the upper elementary and secondary level. This can be the productive struggle secondary teachers are looking for.

Teachers can take play-based learning one step further by providing an anticipation task that is introduced before gameplay. It should be a short task, just a few questions that activate prior knowledge and pique curiosity in the learners. Some examples might be to ask them to answer a few true-false or multiple-choice questions, or provide a journal quick-write. Learners can be paired up or placed in small groups, or work individually if enough resources are available. While learners are involved in gameplay, they will consider these questions and discover the answers for themselves. After experiencing the game, have learners digest and reflect as they try to answer the questions presented to them at the beginning of the lesson.

Long-Lasting Learning

Many of the strategies we have shared thus far include the use of short-form games that can be learned quickly and utilized in a short time frame. However, there are also uses for long-form games within a learning environment. Long-form games are virtual environments that offer expansive storylines or big worlds that take more time to explore. These games need more than a short burst during a warm up for learners to get the benefits from there, but they can keep learners engaged over long periods of time. During gameplay, learners can be learning new concepts, practicing skills, and collaborating with others. Since long-form games can be incredibly engaging, learners have the motivation to voluntarily pick it up and play.

Teachers can introduce a long-form game to their learners at the beginning of the school year or a new unit. By tying the gameplay to standards, learning objectives, and a culminating project, the purpose will be set for learners to play. Educators can provide learners with school time to access the game through learning centers, an early finishers station, or technology class. Additionally, learners are relieved of some traditional homework duties to allow for more time to access the game at home, if resources are available.

Amplify Reading is an example of a program that includes short-form games within the framework of a long-form game. The student experience is an expansive game world with over 40 games and over 30 quests to engage learners throughout the entire school year, both in the classroom and at home. While teachers can monitor student progress on the teacher dashboard, students can also see how much they've grown in their journal.

After the unit or appointed length of time nears the end, learners can be given a creative project to complete either individually or in groups. Learners can be asked to compare characters, write a critique, explore alternate storylines, or extend the story beyond the end of the game. Learners can use mind maps, podcasts, journal writing, video recording, or formal writing assignments to complete these tasks.

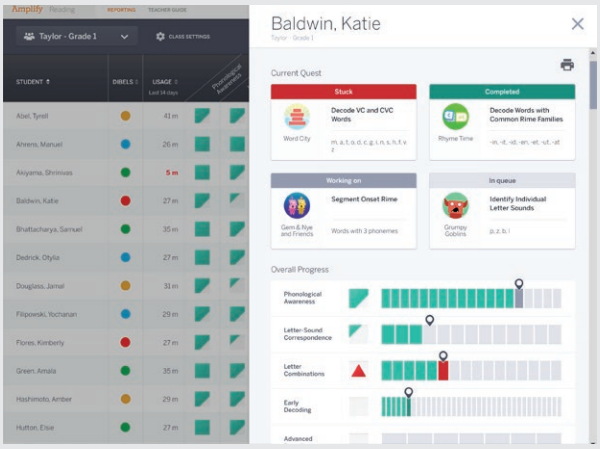
Kid-Approved Test Review

Games can also be used as review tools. Teachers have been using nondigital games as test review for decades by creating activities with a few simple mechanics and basic point systems. By implementing digital games, educators are able to take this a step further. Learners can engage in test review as a whole class experience, in small groups, or individually. Educators can even create differentiated experiences based on learners' needs by changing the challenge level during gameplay.

Using games as test review offers many benefits that go beyond keeping learners engaged. Learners can take a screenshot of their scores at the end of a game and send it to their teacher with a reflection of their progress. Additionally, many educational games provide teachers with performance data collected during gameplay in the form of learning analytics, giving educators greater insight into their learners' progress and even be a predictor of how they will perform in the future.

This is the case in Amplify Reading: While students navigate the world of Bookerton independently, each response a student makes in Amplify Reading—every tap and click—is carefully collected and curated. That means teachers have access to an almost unparalleled amount of data on each student, far more than any assessment can provide.

The Amplify Reading dashboard uses this detailed data to provide insights into student progress across 12 dimensions of reading growth. It is continuously updated so it can be used to identify students in need of teacher support even while they are playing.



"The dashboard was extremely helpful for monitoring progress and planning instruction."

—Third grade teacher, Bedford, IN

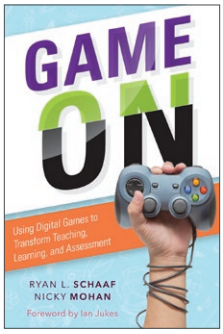
Chapter 8

Your Turn: Support for Using Gaming in Learning

Learning through digital gameplay is being adopted by more and more educators every day. Despite the overwhelming interest, educators are left in search of support and ideas for implementing digital and nondigital learning games in their classrooms. The purpose of this last chapter is to provide educators with some potential next steps to follow if they want to adopt, or develop in their use of, game-based learning.

Books about Digital Game-Based Learning

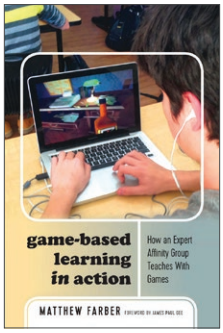
Game On: Using Digital Games to Transform Teaching, Learning, and Assessment



By: Ryan L. Schaaf and Nicky Mohan

Synopsis: Discover how digital gaming can improve learning and prepare students for successful futures. The authors—both experienced educators and enthusiastic gamers—contend that students of the 21st century communicate and learn differently than previous generations. By incorporating digital games into lessons, student learning will more accurately reflect the interactive, engaging reality students experience outside the classroom and better prepare them for college and careers.

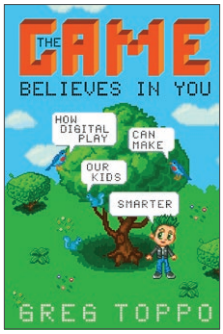
Game-Based Learning in Action: How an Expert Affinity Group Teaches With Games



By: Matthew Farber

Synopsis: How are expert educators using games in their classrooms to give students agency, while also teaching 21st-century skills, like empathy, systems thinking, and design thinking? This question is the basis for Matthew Farber's *Game-Based Learning in Action* that showcases how one affinity group of K–12 educators—known as "The Tribe"—teaches with games.

The Game Believes in You: How Digital Play Can Make Our Kids Smarter



By: Greg Toppo

Synopsis: What if schools, from the wealthiest suburban nursery school to the grittiest urban high school, thrummed with the sounds of deep immersion? More and more people believe that can happen. with the aid of video games. Greg Toppo's *The Game Believes in You* presents the story of a small group of visionaries who, for the past 40 years, have been pushing to get game controllers into the hands of learners.

Professional Learning Networks

Gaming and learning have brought together many experienced educators interested in pooling their knowledge and sharing their experiences in supportive professional networks. **Games4Ed** is a nonprofit network exploring initiatives in game-based learning research, game jams, integration models, and assessment to name a few. They host Twitter chats every Thursday night 8 p.m. EST. **ISTE** created the **Games and Simulations Network** to explore the use, integration, design, development, and evaluation of games, simulations and virtual environments for learning and teaching. The network hosts online discussions and provides professional development opportunities and programs. The **CUNY Games Network** is dedicated to research, scholarship, and teaching in the developing field of games-based learning. Finally, edWeb.net hosts **Game-Based Learning**, a free professional learning community that provides educators, game developers, researchers, and industry executives with a place to learn, ask questions, discuss topics, and share information about games and learning. The community hosts free webinars and live chats with leaders in the field that are highly engaging and interactive.

Regional and National Conferences

There are a number of regional and national conferences that promote learning games and game-based learning programs.

ISTE

FETC

Serious Play Conference

Games for Change

Play Make Learn

Connected Learning Summit

The Expert's Corner: Game-Based Learning Researchers, Writers, and Practitioners

There are plenty of game-based learning researchers, practitioners, and authors to follow and engage with on social media to stay updated on their research and professional insights.

Greg Toppo

Karl Kapp

James Paul Gee

Matthew Farber

Steve Isaacs

Jane McGonigal

Kurt Squire

Constance Steinkuehler

Using games during the learning process can add high levels of motivation, engagement, and fun for learners. A safe prediction is to assume the sheer number of digital games will continue to increase, their quality will improve even more than the current high-quality titles hitting the current market, and more people will adopt gaming as a hobby. As for the field of education, digital game-based learning will continue to trickle into school-after-school as more and more educators take advantage of its awesome potential.

Links to Original Amplify Blog Posts

This guide was originally written based on the **Learning With Digital Games blog series** hosted by Amplify.

Digital Games: Learning through Gameplay – A Prequel

The Power of Gaming: A Global Phenomenon

Setting the Record Straight: The Difference Between Digital Game-Based Learning, Gamification, and Other Related Buzzwords

The Research Supporting Digital Gaming and Learning Part 1: The Gamer's Brain

The Research Supporting Digital Gaming and Learning Part 2: The Gamer's Gains: Evidence of Efficacy

The Landscape of Digital Learning Games: Finding Paydirt

The Criteria for Selecting and Using a Game for Learning

For Parents: Digital Games—Distraction or Learning Tools?

Digital Gaming and Learning (Part 1)

Digital Gaming and Learning (Part 2)

Digital Gaming and Learning (Part 3)

Your Turn: Support for Using Gaming in Learning

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