

## Learning to Play

How Digital Natives learn through gaming and the speed bumps that preclude this.

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## *Abstract*

*Educational gaming has never lived up to its promise. This paper examines some of the reasons why and offers solutions to fully utilize gaming's potential in the classroom. Additionally, educator attitudes and fears are discussed and rebutted. Lastly, it looks at how Digital Natives learn by playing and why classroom gaming should be included as a tool for learning.*

Each day, thousands of children flock to the internet to play Minecraft. They spend hours building their dwellings, battling zombies and creepers and most importantly, exchanging information with their fellow citizens of this online world. Users exchanging information has played a vital role in Minecraft's development. When the program debuted in 2009, buggy performance and lack of tutorials forced players to join together and share information (Stuart, 2013). In essence, the game grew as a community through player interaction and enhancement.

Stories such as Minecraft's typify the development of gaming in a post internet world. All over, players gather together utilizing social media and exchange information on strategies for the latest games, yet while students memorize every hop, skip and jump required to see Mario through his final level, that same tenacity and brain power goes missing when recalling the reasons for the War of 1812 or solving binomial equations.

To date, education's attempts to teach through gaming have yielded mixed results. Ken Squire and Henry Jenkins blame the software citing that to date, "*edutainment* products combine the entertainment value of a bad lecture with the educational value of a bad game" (Squire & Jenkins, 2003). Such a statement oversimplifies the issue. As with any educational product, the quality of the material, the willingness of the educator to trust and teach the material and the

belief of the students that the material is germane to them, drive success. Squire and Jenkins only address only one leg of this triangle. In order for the structure to be sound, all three must be present and equally robust. Educational gaming provides limitless opportunities. One only need listen to a six year old explain his Minecraft strategy to understand this, but tapping this potential requires both an improvement in educational game quality and the full acceptance of the teaching community in the viability of gaming as an educational option.

Enhancing the quality of educational games will prove easy. Game companies have, for years, fine tuned their formula to compete for millions of dollars and thousands of hours that students spend on gaming. These formulas can provide a blueprint for educators when developing their games. Given the advances in programming technology, creating a game no longer requires vast programming knowledge or Picasso like artistic skills. Free programs such as GameSalad and Gimp have placed the tools of a professional development studio squarely in hands of educators.

Just having the tools, however, does not a game creator make. In order to replicate the success of commercial developers, educators must not only model their games based on their commercial counterparts but also understand what drives their students to spend at least 10 hours per week playing video games (Rideout, Foehr & Roberts, 2010). The learners of the present generation differ greatly from those who educate them. More than simple cosmetics, the learners of this generation grew up using digital technology and therefore think differently from those administering their lessons (Prensky, 2005). Moreover the constant media exposure of today's youth has physically altering the brains of the new generation sacrificing face-to-face communication skills and replacing them with multitasking and social networking skills (Small & Vorgan, 2008). Clearly, if media saturation results in physical alteration of the brain, then these minds must be reached and taught by new, oftentimes different, approaches. A common

complaint regarding the current state of educational gaming is that the games themselves rely on traditional pedagogies (Squire & Jenkins, 2003). To these plaintiffs, educational gaming equates to driving a Ferrari to the corner store for a quart of milk. This comparison is valid. Asking a mind which can master the nuance and speed of movement required when completing Battlefield 3 to learn from a flash card or flip chart approach seems, at best, a waste of resources. From personal observation, teachers treat games more like a lesson, designing games with stated learning objectives and desired outcomes. Such approaches must have current day students rolling their eyes and saying, “This isn’t a game. This is school.”

Unfortunately, up until very recently, educational games have taken this exact approach. Some have blamed academia for designing bad games while others have cited that if left in the hands of game designers, educational games will be fun and engaging, but lacking in education (Van Eck, 2006). As with any debate, there exists a middle ground; one in which educators accomplish their objectives and engage their students to fully utilize their new found skills. To accomplish this, major changes must occur. As expected, these changes begin with education, not of the students, but of the teachers.

Marc Prensky (2001) coined the term “Digital Natives.” At the same time, he created an even more important term, “Digital Immigrant.” Today, the educators in our classrooms are Digital Immigrants. By and large, they use computers to check email, visit the internet and occasionally use information processing tools (Gray, Thomas & Lewis, 2009). Contrast this with the way the average student uses a computer and the resulting gap proves insightful. Most students will wake up, check their email, visit their Facebook page and send a tweet or two before their morning cereal. Most will not use a computer to accomplish these tasks. They will use their phones. The difference is comparable to comparing Cuneiform to movable type. Therefore, extending the

metaphor, we have ancient Mesopotamians teaching our current students. Clearly a quantum shift is required.

Bridging this gap will require educating the teachers, converting them from computer users to computer creators. Each teacher knows how best to reach their class. However, a New York Times article in 2007 reported that several school districts were dropping their laptop programs due to the inability of their workforce to truly tap into the computer's potential (Hu, 2007). In this case, it was the Digital Immigrants not the Natives who were restless. Rather than address this frustration by throwing the baby out with the bath water, school districts should concentrate their efforts on teacher education to create games tailored for their learning environment. Given an engaging, specifically designed game to play, students would spend more time learning and concentrating on winning the game than hacking their grades and mindlessly surfing the internet. Even with the appropriate skills, there would still be the question of what makes an effective game. For this answer, the education system need only look at how their students play when on-line.

Traditionalists often view Digital Natives as less than motivated given the amount of time they spend playing, but playing is work for them; it is what they do and how they learn. Unlike linear thinkers who move smartly from point A to point B to complete a task, Digital Natives are parallel processors and random clickers (Prensky, 2005). Thus, when given a goal or objective to accomplish, Digital Natives may spend an inordinate amount of time, in the minds of their teachers, exploring the terrain and testing to see what various objects do when clicked. Such things are counter-intuitive to Digital Immigrant Teachers, but to the student, they are vital and must be considered when designing any educational experience. Thus, designers should include activities outside of the natural flow of the game to encourage this type of exploration. These

activities must result in concrete rewards which students will specifically seek out during play. For example, a math type quest game may include a secret chamber containing a classmate's photo. Including a chamber for each member of the class not only keeps the class engaged and learning, but promotes social interaction within the classroom. This social interaction serves as a vital part of any educational game design. The goal of the game, that being that the students are continuously motivated to play and learn, must not be overlooked. A well designed game should create a buzz in the classroom, prompting students to play and learn outside the class as well. As with Connectivism, adding this social element also promotes group learning and encourages each student to contribute and draw from the experience.

The combination of education, observation and personalization can propel the quality of educational video games to new heights. A simple improvement in quality, however, is only one half of the equation. Even equipped with the most sophisticated hardware and software, technology on its own will not improve results, nor should technology replace the teacher in an education system. Quite the contrary, such technology, combined with the trust of the educator will lead the teacher to a far more rewarding role within the classroom environment.

This trust factor cannot be overlooked. Just as the aforementioned Mesopotamians would have distrusted Guttenberg, there exists an inclination in the Digital Immigrant to distrust the very technology which would put them on an equal footing with their Digital Native students (Prensky, 2005). Dr. Young Kyun Baek (2008) conducted a study in Korea investigating why gaming was not considered a viable method of classroom instruction. The information resulted in six key reasons why gaming could not be used for teaching. Each of these reasons should be examined through the prism of available technology and related back to educators in general in order to overcome their fears of the unknown.

### **Inflexibility of curriculum**

Baek's subjects stated that the games available did not specifically address their curriculum. They advocated a system of mapping onto curricula as necessary. Given the educational environment of standards and standardized testing, some of these concerns are valid. However, were teachers educated and given technical support, these obstacles could be easily overcome and personalized games created. Rather than map the game to the curricula, mapping the curricula to the game represents a far better solution for enhancing learning and knowledge. Additionally, gaming allows teachers to take learning far beyond the standards, addressing the needs of a diverse group of learners.

### **Negative effects of gaming**

For whatever reason, Digital Immigrants think of gaming as first person shooter games like Halo or Call of Duty. Clearly, Baek's teachers feel the same and fear gaming will lead to more violent student behavior. They overlook the fact that Nintendo's non-violent Mario and Pokemon series lead all existing franchises in terms of sales (Moon, 2014). Quite simply, the classroom can overcome the negative effects of video games by designing games, which are non-violent but will engage and motivate the students. Fragging Zombies is not the answer, but collecting Pikachu might be.

### **Student's lack of readiness**

In addition to the student's learning curve for using the game, teachers expressed fears over the digital divide that classroom gaming would create. This represents a challenge to the immersion goal of classroom gaming. Teachers were also concerned that game involvement would preclude them from teaching. These fears are ungrounded. In a gaming classroom, the teacher does not simply leave the students alone to wander about in unfamiliar territory, but

serves as a guide and a facilitator of the gaming process (Gee, 2005). Much like their role in the Connectivism, teachers are not playing the game. They are guiding the learners.

### **Lack of supporting materials**

Baek's teachers complained that games do not come with operations manuals or with instructions on incorporating the game into the classroom environment. Such statements reflect the Digital Immigrant at their worst. Digital Natives do not expect a game to come with directions. They expect to learn the game by playing (Prensky, 2005). Customization and personalization of the game for the classroom eliminate these arguments. Again, a game for a gaming classroom should be mapped to the curricula and not vice versa.

### **Fixed class schedules**

The teachers contended that fixed classroom schedules limited the opportunities to employ classroom gaming as an effective teaching technique overlooking the fact that gaming should only be part of the classroom equation. Larry Cuban (1986) maintains that in order for the transfer of knowledge, skills and values to be effective, such subjects should be presented through a variety of media. While computer gaming should not be the only form of media utilized, it should be included within the mix. Odds are that a student is far more likely to reinforce learning at home by playing a computer game than re-watching a YouTube video. Moreover, the social nature of gaming can help ensure that students relate their learning experiences to their peers thus establishing a 24/7 learning environment.

### **Limited budget**

With this topic, the preconceptions of Digital Immigrants come into play. The teachers cited the limited hardware capabilities of school computers, the idea being that all computer games consume gigabytes of memory and require CERN-like processing power to run. While this may



hold true with the aforementioned Call of Duty, in general, good gaming experiences need not be proportional to computing power. To be sure, presentation and graphics must be on par with their commercial counterparts in order to sufficiently engage the students, but the key to an engaging game is the story and the play.

There will be an inclination for the Digital Native to scoff at the issues listed above; however the trepidations of these educators should not be taken lightly. They represent very real fears of the unknown. These are individuals being asked to reach a classroom full of students whose language they do not speak. School systems should work with their teachers to bring them out of their 21<sup>st</sup> century Plato's Cave.

Once on board, these teachers will find that game based learning combines all the best practices from a variety of learning theories. While gaming relies on multimedia learning principals for its presentation, its ability to promote sharing of information and establishment of community tie very closely with the theory of Connectivism. As with other things, Digital Natives do not conform to previously established norms. As a means of comparison, consider how a Digital Native writes a research paper. No example better typifies the difference in learning styles and why gaming suits the style of the modern day student.

Everyone is familiar with the traditional methods of writing a research paper however, unlike their Digital Immigrant teachers, upon being given the assignment, the Digital Native will take to their computer. They will open a window for their word processor, a window for their internet browser, mentally develop a thesis and begin typing. As the paper progresses, they will refer to their search engine or forums to find specific references to buttress their arguments. They will not read the entire article, opting instead to perform a word search within the article for the

nugget of required information. Lastly, proofreading and editing for the Digital Immigrant will be done on the fly. These methods can result in a well constructed, well written paper.

As can be seen in the example above, Digital Natives write papers and learn in the same fashion as in which they game. They abandon Point A to Point B thinking in favor of exploration and learning on the fly. They rely on the computer as a partner in learning rather than a tool for production, and with the aid of their partner and their community, move forward. If this is how they learn, clearly, this is the way they should be taught.

The changes of the Digital Age represent what Prensky (2005) calls a singularity, “an event that changes things so fundamentally that there is no going back.” The only way to go is forward, but to do so without fully utilizing the potential of the children of this singularity would be a waste. There is no set learning theory to describe how this generation learns. It is too soon. we can, however, describe how they play and see that when they play, they learn. Thankfully, each generation of educators believe their students represent limitless potential on the horizon. Given the immediate availability and accessibility of boundless information and the willingness of these educators to employ new and different methods, the potential of this next generation represents an amazing opportunity.

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