**Collaborative Inquiry Project**

# An Annotated Bibliography and Literature Review of Gaming in Education

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**Annotated Bibliography**

Alexander, J. (2009). Gaming, student literacies, and the composition classroom: Some possibilities for transformation. *College composition and communication*, 35-63.  Retrieved from ERIC database (EJ857821)

In this article, Alexander (2009) argues that by incorporating gaming into composition courses, our approach to literacy will be a transformative one, offering us a “rich venue” to see multiple literacies (visual, technological, and textual).  The two graduate students in this study articulate their understanding of how the multimodality of gaming affects their understanding of what literacy is and how they understand gaming as contributing to their development as literate citizens.  Their reflections include what these games offer in terms of life skills, particularly literacies they will be able to transfer in different situations.  Similar to any technology one incorporates in the classroom, gamifying education needs to be well-thought out and planned.  Understanding student motivation and integrating gaming into curriculum involves careful planning to effectively deliver meaningful experiences to students.

Ansoms, A., & Geenen, S. (2012). Simulating Poverty and Inequality Dynamics in

Developing Countries. *Simulation & Gaming*, *43*(6), 713-728. Retrieved from ERIC database (EJ987840)

Ansoms and Geenen (2012) examine how the simulation game DEVELOPMENT MONOPOLY brings awareness to issues of poverty and inequality in developing settings.  A unique feature of this game is that the participants are allowed to adjust the rules of play, enhancing players’ involvement right from the start.  By altering the rules of the game, students are able to reflect upon how the rules could be in favour of the less fortunate and how those modifications could be applied in reality.  Concurring with other research in our exploration on gaming, simulations can induce intense feelings and learning how to apply those feelings to real-life issues can make a powerful impact when dealing with social justice issues (McGonigal, 2012).

Crocco, F. (2011). Critical Gaming Pedagogy. *Radical Teacher* (91), 26-41.Retrieved from: <http://www.jstor.org/stable/10.5406/radicalteacher.91.0026>.

Games can be used for social critique or social reproduction. The current move towards “games-as-learning” and the larger trend towards “21st century skills” are seen as solutions to the current economic crisis in the United States. The goal of education according to proponents of 21st century learning is to prepare students for a post-industrial economy. Instead of using games to teach 21st century skills, games should be used to challenge inequalities that created the current economic situation. Crocco presents two methods of critical gaming pedagogy: simulation and codification. Simulation involves using serious games to identify with marginalized populations. Codification involves critically observing popular video games as cultural artifacts.

Gee, J.P. (2012, March 21). James Paul Gee on Learning with Video Games [Video file]. Retrieved from:<https://www.youtube.com/watch?v=JnEN2Sm4IIQ>

For social collaborative games, Gee argues that the game is not the only thing at stake. When looking at games to integrate into the classroom, educators should not only focus on the game itself, but the bigger picture. Good educational games are designed so that students will need to work with people of different skill sets in order to fully solve a problem. Using video games provides students motivation and the ability to think and visualize certain steps with images and pictures in their mind. Without these experiences students are not able to apply their problem solving skills to authentic tasks.

Gee, J.P. (2013, November 13). James Gee Principles on Gaming [Video file]. Retrieved from:<https://www.youtube.com/watch?v=4aQAgAjTozk>

James Gee highlights how video games attract people for learning: *Empowered learners* – students will not make a change if they do not feel they can manipulate something. *Problem based learning* – students need to use their critical thinking skills and need an environment where they can apply their knowledge. *Understanding* – Most of the problems we face in the world are complex. A game is complex and gives practice on how to work through difficult problems. These principles show a deep connection between game design and teaching. While each game will not have all thirteen principles, if we understand how they attract people for learning we can contribute to increased motivation and understanding.

Halverson, R. (2005). What can K-12 school leaders learn from video games and gaming. *Innovate: journal of online education*, *1*(6), n6. Retrieved from

<http://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.186.5298&rep=rep1&type=pdf>

Whereas the Education world is very standardized and rigidly designed, games offer the opportunity for the users to define their world, supported by a community of users with similar goals.  Halverson talks about two kind of games: exogenous and endogenous.  The first one, we use regularly; the second has yet just started to involve building and creating new learning environments.  The author mentioned the importance to add implicit connections between the game and other subject in class.  He talks about RTS (Real-Time Strategy) games that put the learner in complex environments and have them think, reflect and collaborate to reach their goal.

Klopfer, E., Osterweil, S., & Salen, K. (2009). *Moving learning games forward.*Retrieved from<http://education.mit.edu/papers/MovingLearningGamesForward_EdArcade.pdf>

Similar to any technology one incorporates in the classroom, gamifying education needs to be well-thought out and planned.  Understanding student motivation and integrating gaming into curriculum involves careful planning to effectively deliver meaningful experiences to students.  According to the MIT paper “Moving Learning Games Forward,” gaming can be used as: authoring platforms, content systems, simulations, trigger systems, technology gateways, exemplars of point of view, documentary, texts to be critiqued, and research assignments (Klopfer, E., Osterweil, S., and Salen, K., 2009).  Taking the risk to embrace this technology in classrooms requires support and effort from all stakeholders, however, the potential gaming offers to student learning is a future generation of lifelong learners equipped to contribute to society in meaningful ways.

McGonigal, J. (2010, March) *Jane McGonigal: Gaming can make a better world* [Video file]. Retrieved from: http://www.ted.com/talks/jane\_mcgonigal\_gaming\_can\_make\_a\_better\_world/transcript?language=en.

McGonigal (2014) believes that people are not as good in real life as they are in games because not only do we do better because we achieve more in game world, but we are also motivated to do better because we are inspired.  Her research delves into taking those feelings from gaming and applying them to real life.  I believe that those feelings can be brought on when personalizing learning occurs in the classroom.  Gaming is a hook for many students and knowing and understanding this can lead to powerful learning.   McGonigal (2014) shares that all the time we spend playing games; we are actually changing what we are capable of as human beings.

Partington, A. (2010). Game Literacy, Gaming Cultures and Media Education. *English Teaching: Practice and Critique*, *9*(1), 73-86.  Retrieved from ERIC database (EJ890515): <http://files.eric.ed.gov/fulltext/EJ890515.pdf>

Partington begins by explaining what is literacy and its use in schools.  He compares games to *Choose your own adventure series* and talks about a text that is dynamic and alive.  The article demonstrates the similarities between texts and computer games.  It is discussed that games are about play.  There is much to be learned on the ludology of the game and on the social dimension of the video game.  The similarities between the game editing and the text writing are impressive. The game editing and the text writing are similar in some rigid aspects but the creative process is flexible and original.

Penix-Tadsen, P. (2013). Why We Should Take Video Games Seriously (and When We Shouldn't).    *Latin American Research Review*, *48* (1), 174-190. Retrieved from

<http://muse.jhu.edu.ezproxy.library.ubc.ca/journals/latin_american_research_review/v048/48.1.penix-tadsen.html>

Video games are neglected media, which Reichmuth and Wernig define as cultural artifacts that “exhibit strong popular appeal and economic relevance, contrasted by a lack of cultural prestige and scientific coverage” (2006, p. 46) . Video games dramatically shape peoples’ perception of Latin America, but receive little scholarly attention compared to film and literature. Penix-Tadsen develops a taxonomy that can be used to critically evaluate games situated in Latin America. This taxonomy is divided into three classifications: *Contras, Tomb Raiders*, and *Luchadores*.

Sanford, K., & Madill, L. (2006). Resistance through Video Game Play: It's a Boy Thing. *Canadian Journal of Education,* 287-306. Retrieved from<http://www.jstor.org/stable/20054157>

Longitudinal study that argues boys’ participation in video games is a form of resistance against school values, parental authority, and social expectations. Video games offer a safe space to break the rules and challenge conventions. Resistance in gaming worlds, however, does not translate into real world action. Furthermore, the majority of video games perpetuate existing class, race, gender, and sexual orientation stereotypes. The authors ask if there is a place in video gaming to encourage resistance on a more conscious and responsible level through game play.

Shaffer, D. W., Halverson, R., Squire, K. R., Gee, J. P., & Wisconsin Center for Education Research, M. (2005). Video Games and the Future of Learning. WCER Working Paper No. 2005-4. *Wisconsin Center For Education Research*. Retrieved from <http://files.eric.ed.gov/fulltext/ED497016.pdf>

The future of learning in education includes the use of video games as a tool.  Video games provide meaningful experiences that are applicable in the real world, making the learning experience authentic.  Virtual worlds provide an enriched environment in which the learner has the ability to experience concrete realities, problem solve, and understand complex concepts in alternate environments without ever leaving the classroom.  Game players have the opportunity to explore different identities, communities, and realities which encourages further gaining of knowledge and understanding.  Video games offer a valuable way to develop skills and perspective via a virtual world experience.

Unterhalter, E. (2009). Global justice or other people’s problems? Computer gaming and critical reflection in an international classroom. *London Review of Education*, *7*(1), 41-53. Retrieved from ERIC database (EJ833175).

This article outlines the problems faced in higher education in attempting to develop learning about global social justice. By focusing on the game “Classroom challenge,” students reflect on how the world might achieve education for all. When solving complex issues the students questioned if the values embedded in the game enough were substantial enough or if it highlighted assumptions. However, by thinking critically about aspects of the game, students were also able to apply this critical discussion to complex issues of social justice. This article is important as it recognizes the drawbacks of video games in teaching social justice and also encouraged student feedback and opinions.

Willis, J. (2011). *A neurologist makes the case for the video game model as a learning tool.* Retrieved from <http://www.edutopia.org/blog/neurologist-makes-case-video-game-model-learning-tool>

Dopamine is a chemical released in the brain when a person feels success, prompting that person to repeat the activity.  When students pass a level in a video game, solve a problem, or answer a challenging question correctly, dopamine is released. The physical response of dopamine reward encourages intrinsic reinforcement by motivating the learner to continue receiving the dopamine reward.  Game-based learning provides feedback that allows the learner to gain further understanding and correct mistakes, which sequentially grants the learner responsibility of his or her own progress. In order for game-based learning to be successful, the game must challenge the learner, but at the same time not be too difficult.

Willis, J. (2012, April 18.) Neuroscience Pathways From Lab to Classroom: Dr. Judy Willis  [Video file] Retrieved from <https://www.youtube.com/watch?v=WHRyPbcLKis&t=1507>

When people are stressed or confused the brain reacts by not allowing information to pass to the higher brain (prefrontal cortex).   When this stressed state in the brain is continuous or if a student sustains repeated failure, they will display a lack of confidence and effort in school.  Dr. Judy Willis discusses applying a video game framework to education.  When children play video games despite failure, 80% of the time they will sustain effort.  Video games provide achievable challenges and immediate feedback allowing the player to make cognitive gains.  Players are intrinsically motivated when the brain releases dopamine (a pleasure response) from successfully completing a level.  Games are leveled for the individual learner allowing him or her to progress at their own pace.

# Introduction

The proliferation of technology is changing the way students are learning and the way educators are teaching. Young people are growing up in a ubiquitous, media-saturated society and educational systems are being challenged to respond to the rapid growth of digital technologies and their implications for learning in the 21st century. Gaming is a popular pastime among children, teens, and adults and game-based learning is one pathway to educational reform as it offers a unique and engaging context for learning. Yet, Shaffer (2005) argues that classrooms have not adapted to this learning revolution. They do not see the relevance of school curriculum past elementary grades. (Shaffer, 2005) When incorporating video games into a classroom, it is important to consider how the brain is working, some of the aspects of design, the potential impact on the learners and the cultural influences it might have. While video games provide motivation and stimulation to learners through collaborative work, they have been criticized for having violent themes and inviting anti-social behaviours (Shaffer, Halverson, Squire & Gee, 2005). The question is how can we harness the positive learning aspects in game playing and apply them in education?

# Brain Based Research

In the article by Willis (2011), a video game model was applied as a tool to classroom learning. Dopamine is a chemical released in the brain when a person feels success, prompting that person to repeat the activity. When students pass a level in a video game, solve a problem, or answer a challenging question correctly, dopamine is released. The physical response of dopamine reward encourages intrinsic reinforcement by motivating the learner to continue receiving the dopamine reward. According to Willis (2011) using a dopamine reward system is proof that authentic learning does occur.

In the brain the amygdala is the part that either allows information to pass further to the prefrontal cortex, which could be referred to as cognitive gains, or it stops the information from progressing any further. When children repeatedly experience failure in the classroom, their amygdala puts on the stop causing a lack of effort. The brain stress response may manifest as students acting out or zoning out. When playing video games, despite experiencing failure, students will continue to play 80% of the time (Willis, 2012). Willis (2012) says that this is because kids persevere with achievable challenges and ongoing feedback that they receive when playing video games. When the brain receives feedback of success, it reinforces the action by seeking more successful experiences (Willis, 2001).

In order for game-based learning to be successful, the game must challenge the learner, but at the same time not be too difficult. Applying the video game model in the classroom requires ongoing daily assessment with feedback, which could be challenging in a classroom with a large amount of students. Knowing that children are individuals, each with their own learning needs and goals, this model will not work for all children. “The brain is powerfully shaped by genetics, development, and experience while actively shaping the nature of our experiences and the culture in which we live” (Green, 1999, p.682). Educators need to acknowledge that experiences play an integral role in how the brain learns and develops. Knowing the individual needs of learners in the classroom and applying applicable models to differentiate will be more successful than trying to apply a one-size-fits-all model in education.

# Aspects of Design

When looking at how games are designed for the players, Halvorsen (2005) argues “schools are moving toward increasingly standardized learning experiences, [and] games offer the prospect of user-defined worlds in which players try out (and get feedback on) their own assumptions, strategies, and identities” (p.1). It is a much more stimulating and personal participation for the learner and grows on cooperation and collaboration, building a better experience. Teams of specialists think the gamer’s environment offers powerful design principles for these learning environments. Halvorsen (2005) highlights differences between the current education games and video games. He draws a distinction between exogenous and endogenous games in schools (p.1). The first one, we see in schools everywhere, as it is the easiest to embed in everyday teaching style. “Exogenous games provide simple networks of generic, interactive strategies useful for organizing access to a wide variety of content... Endogenous video games connect game design and domain content by integrating relevant practices of the learning environment into the structure of the game” (Halvorsen, 2005). Games like *Jeopardy* or *Wheel of Fortune* are considered exogenous, as they are simply constructed, simple designs and quickly adapted to multiple learning activities. But there is no necessary relations to content. On the counterpart, endogenous games offer “inefficient and unpredictable environments for learning school-based material and have learning outcomes that are difficult to map onto curriculum standards” (Halvorsen, 2005). Games like [Rise of Nations](http://fr.wikipedia.org/wiki/Rise_of_Nations), [Civilization III](http://en.wikipedia.org/wiki/Civilization_III) or [Railroad Tycoon II](http://en.wikipedia.org/wiki/Railroad_Tycoon_II) allow players to engage in design activities that draw on issues applicable in life. The way the games are designed offer opportunities for learners to transfer what was learned and apply their knowledge in a variety of real life situations. Learning to play the game is also a challenge and is inherent to any lifelong learning. When faced with complicated questions with social impact, the critical thinking and inferences skills learned can help support the decisions made.

We believe that the gaming world can offer a safe and efficient learning opportunity to the learners. Halvorsen (2005) argued that the role of the learning environment in a traditional school setting is to provide a context to make structured content accessible to students; the role of the learning environment in an endogenous game-based setting is to scaffold prompts for helping students construct legitimate analogies between what can be learned in the game and what schools need to teach (p.4). In games like [Climate Defense](http://www.gamesforchange.org/play/climate-defense/) or [SimCityEdu: Pollution Challenge](http://www.gamesforchange.org/play/simcityedu-pollution-challenge/) learners are working at solving real life situations and it focuses their attention on something authentic that could be applied around them. “These activities rehearse and scaffold critical, cultural and creative ideas and concepts to make explicit what is implicit and to extend students’ beyond their experiences, so that they are able to apply them independently in other contexts displaying and developing their literacy (Partington, 2010).

# Motivation, Simulation, Cultural Influence, and Critical Gaming Pedagogy

Using gaming to teach about social justice is gaining attention in educational settings worldwide. Games offer students an enhanced learning experience and can inspire them to do better (McGonigal, 2014). Research suggests that immersion in games that challenge social justice issues can evoke feelings that are applicable to real life issues. In the Ted Talk *Gaming Can Make a Better World* (2014), McGonigal suggests that gamers are individually capable of changing the “virtual” world because they are motivated and inspired to do better. She states, “We become the best version of ourselves, most likely to help at a moments notice, get up after failure and try again. In real life when we face failure, we often don’t feel this way.” By making the real world more like a game, McGonigal (2014) believes we can apply feelings from virtual games to real life and fundamentally change what we are capable of as human beings.

Integrating video games into the classroom provides a sense of “being there.” Video games can virtually transport students to different areas, time periods, or settings that they might otherwise not see. Video games allow players to take part in an underwater adventure, go back in time, accomplish a quest in a fantasy realm, or make important decisions within a local community or in a country across the world. This sense of “being there” can help teach complex historic and contemporary social justice issues. Simulations can give a voice to minorities and other subordinated views (Unterhalter, 2009, p. 43).

While other forms, such as video, can also provide a sense of being there, Frasca (2003) argues that a player’s ability to directly control an in-game avatar moves video games beyond representation towards “an alternative semiotical structure known as simulation” (Frasca p.222). Direct control, combined with the multisensory integration of text, visuals, sound, and vibrations, create a learning experience that is more immersive, exhilarating, and memorable than traditional forms (Sanford & Madill, p.295). Because video games engage players emotionally, they can easily disseminate ideas and values (Crocco, p.31). Designers of serious games, or games designed for a purpose other than entertainment, use identification with in-game avatars to promote empathy towards marginalized populations (Crocco, p.30). Ansoms and Geenen (2012) argue that “simulation games can induce intense feelings of frustration, anger, or disappointment” (p.721). Their study of the simulation game DEVELOPMENT MONOPOLY found that students became emotionally attached to their characters and found it difficult to “step out” of their personas afterwards. Ansoms & Geenen (2012) also observed that gaming increased student motivation and interest in learning about poverty and inequality in developing environments primarily because they were allowed to adjust the rules of the game, enhancing their involvement right from the start. With this, a greater level of cooperation and communication between students was evident, creating a more positive socioemotional classroom. According to Chee, Y.S., et al., (2013), it is the collaboration of the students together and guidance from their teacher who must work together to make meaning of their in-game experiences and connect these experiences to real-world events and issues through thoughtful reflection.

In a study conducted by Elaine Unterhalter, researchers aimed to analyze university students’ responses to a computer game “Classroom Challenge.” The game was designed to develop insight into education and global social justice through virtual simulations (2009). In this study, students were required not just to play the game, but also to write critical commentary on the game and its assumptions (Unterhalter, 2009, p.44). Students were faced with difficult challenges that governments in various countries would face in regards to education equality. In “Classroom Challenge”, students easily became involved and were able to identify with the countries they represented. In their reflections, the participants discussed a variety of emotions that they faced. If changes were not occurring as they had planned, they became angry, frustrated and puzzled (Unterhalter, 2009, p.46). While the images presented on the screen represented another environment, students often felt frustrated with the limitations, the rules of the game and the static layout (p.46). James Gee argues that in order to empower learners, they need to feel like they change something and what they are doing matters (Thorn, 2015). The participants agreed that the game was realistic and provided a meaningful authentic task but they were mindfully aware that they were playing a game. As a result, they felt that their actions, while beneficial to their learning, would not have any real consequences (p.47).

Creating environments where students can connect to other people, show empathy and discuss serious issues is a difficult task. Many social justice issues are complex. In order to comprehend these issues we need tools to solve them. James Gee believes that since a game itself is complex, it gives learners practice on how to work through difficult problems (Thorn, 2015). While this provides a benefit to critical thinking skills, it can also be difficult to determine if a game/simulation can provide enough insight into the topic. In the case of “Classroom Challenge”, students questioned the values behind “playing” a game that focused on weighty matters and problematic assumptions (Unterhalter, 2009, p.47)

Although the articles reviewed here suggest gaming can have a positive effect on real life issues, the literature also raises some other concerns. Simulations, are also being used to engage youth for purposes other than social justice. The U.S. Army, for example, sets up a first-person shooter in malls in an effort to recruit youth (<http://www.americasarmy.com>). Other research has found that gaming can have a counter-effect and lead to desensitization, defined as “a reduction in emotion-related physiological reactivity to real violence” (cited in Barlett, C. P., Anderson, C. A., and Swing, E. L., 2008, p.391). In *Video Game Effects—Confirmed, Suspected, and Speculative*, Barlett et al. (2008) examined the effects of violent and nonviolent video game exposure on negative and positive outcomes. They found a correlation between repeated exposure to violent video games and a lowering of empathetic concern for others in need. Anderson, C. A., Shibuya, A., Ihori, N., Swing, E. L., Bushman, B. J., Sakamoto, A., et al. (2010) concur with Barlett et al. (2008) that repeated exposure to scenes of violence and the pain and suffering of others will impact an individual’s physiological reactions to new scenes of violence. We believe that this may be true of excessively violent video games. However, we also believe that non-violent serious games, such as “[World Without Oil](http://worldwithoutoil.org/)”, do not simply desensitize gamers to injustices, but rather can enhance gamers’ understanding of social issues and equip them with the real life tools needed to address injustices.

Intimate identification with an in-game avatar can also make it difficult for gamer’s to establish a critical distance between themselves and the game’s values. Simulations are not reality, but rather, cultural artefacts loaded with values and assumptions. Ansoms and Geenen (2012) suggest “one main drawback of the simulation game approach is that it considerably oversimplifies reality” (p.720). Games are purely objective and may result in the reinforcement of stereotypes. In *Gamer Theory (2007),* Wark analyzes the popular video game *The Sims* and argues that an “ideal combination of meritocracy, full employment, equal opportunity, and upward mobility is perceived to be the norm” (p.26). Boellstorff (2006) notes that the “relative absence of feminist, political economic, queer, and other theories of culture is striking” (p.31), while Sanford and Madill (2006) argue the majority of popular video games perpetuate existing class, race, gender, and sexual orientation stereotypes.

Reichmuth and Wernig (2006) argue that although video games dramatically shape the way young people see the world, they are afforded “a lack of cultural prestige and scientific coverage” (p.46). In “Latin American Ludology”, Penix-Tadsen (2013) explores how video games such as *Contra, Call of Duty: Black Ops,* and *Tomb Raider* are dramatically shaping young people’s perception of Latin America, but receive little scholarly attention. David Leonard (2004) has argued that gaming is one of the most influential conveyors of discourse and states: “Video games - more so than schools, religion, or other forms of popular culture – are teaching Americans about race, gender, sexuality, class, and national identity” (p.2). He believes “video games provide an ideal text and teaching moment in which educators interested in social justice can deconstruct sources of social meaning and provide tools of analysis and alternative knowledge” (p.2).

The increased cultural influence of video games, combined with concerns over both the values inherent in popular video games and the ease by which video games can disseminate these values have led calls for a critical gaming pedagogy, which Crocco (2011) defines as an “alternative gaming praxis that intersects game-based learning with critical pedagogy to promote critical thinking” (p.27). Crocco’s theory of critical gaming pedagogy is influenced by Paulo Freire’s concept of codification, which involves exploring a theme based on the theme’s representation in media. In *Resistance through Video Game Play: It’s a Boy Thing,* Sanford & Madill (2006) developed a series of critical questions gamers can ask to create emotional distance between self and game.

When considering a K-12 classroom, we would argue that in order to effectively teach concepts of social justice, like unequal distribution of wealth, privileges, health or education that video games would need to be supplemented with other resources or technological tools. In order to grasps these complex concepts, it is not enough to simply allow a child to navigate through a video game without any pre-discussion or follow up. Video games can provide a tool for learning, but games must also be subjected to critical analysis.

# Potential Impact and the Future of Video Games

The impact of computers, today, is present in every single part of our life. Gaming is an aspect that is present in students’ life and easily accessible. It offers a platform for socializing and experiencing opportunities otherwise inaccessible to them. Does it impact the way learning happens? Will it offer different opportunities and challenges to learning? Yes! Games currently available will not replace schools nor teachers, but they “are inherently simplifications of reality…” (Shaffer, 2005). Shaffer (2005) argued that they give a glimpse of how we might create new and more powerful ways to learn in schools, communities, and workplaces… they create new social and cultural worlds (p.3).

Learning becomes powerful when it is “personally meaningful, experiential, social and epistemological at the same time” (Shaffer, 2005). The players inhabiting a virtual world experience a different life otherwise inaccessible to them in real life. The learning experience is completed between involvement in the game and collaboration with other players experiencing something likewise. Games like [DeuxEx](http://fr.wikipedia.org/wiki/Deus_Ex) or [LineAge](http://www.lineage2.com/en/) offer such a rich environment and provide powerful contexts for learning. The player is immersed in worlds sparked by images, animations, sounds, videos where brains are constantly stimulated. Shaffer (2005) stated that in virtual worlds, learners experience the concrete realities that words and symbols describe (p.4). To add to this statement, in the gaming world, the player is involved in “robust game-playing communities” (p.4). Whereas schools have students alone in their groups, games bring together players, competitively and collaboratively to attain their benefits and reach goals. Rarely classroom work has an impact outside the school. Virtual worlds can develop a set of social skills and organize meaningful learning experiences useful outside of those school walls.

A measure of good teaching would be the extent to which students can answer questions about facts on tests. “But *to know* is a verb before it is a noun, *knowledge*. We learn by doing - not just by doing any old thing, but by doing something as part of a larger community of people who share common goals and ways of achieving those goals” (Shaffer, 2005).  [Purposeful games for social changes](http://purposefulgames.info/archive#_=_) harness possibilities for students to experience what it is to be in challenging places or situations across our world and try to find ways to give a better chance of living as if it was our own life. It gives a different perspective to the learner and have them rethink their habits in and outside their learning environment.

As of 2015, Shaffer and his team ([Epistemic Games Group](http://edgaps.org/gaps/publications/)) demonstrate how computer games help children learn and how virtual internships offer opportunities to learners to meet today’s market demands. They also discuss how each learners can be part of changes in our world by applying knowledge to day-to-day experiences.

Conclusion

The influence of serious games in education is growing fast and is providing great opportunities to expand the minds of learners. As the gaming world is expanding exponentially, video games encompass many opportunities for critical activity and creativity development. They can provide a unique opportunity for students to bring their own “cultural capital” into the classroom (Partington, 2010). It is important to consider different aspects of learning to implement serious games in schools at this point. The brain supports all aspects of the learning process and it needs stimulation. As discussed, when the brain receives feedback of success, it reinforces the action by seeking more successful experiences. (Willis, 2001) Kids will persevere with achievable challenges and ongoing feedbacks. In order for game-based learning to be successful, the learner must be challenged, but at the same time he must be able to complete the tasks. Following this path, learning environments have to be designed accordingly. On this matter, Halvorsen (2005) highlights differences between exogenous and endogenous games in schools. It is important to rethink the way we plan lessons for the learner to engage in designed activities that draw on issues applicable in life.

The potential for using games as tools for critical reflection on social justice issues is gaining attention from school leaders and teachers. Video game simulations have the potential to make students more aware of social issues and more empathetic towards others. Crocco (2011) examined how simulations engage players emotionally, which greatly facilitates the dissemination of ideas and emotions. McGonigal (2014) suggests that evoking feelings through games can facilitate better understanding of real life issues and translate to real world actions. This process would support the learners in taking proactive steps forward. Video games dramatically shape the way young people see the world. These environments are extremely well designed and make their imagination fly with creativity and a sense of control. In our review, we also highlight some of the benefits and future potential of incorporating gaming in the classroom. One of the main benefits gaming offers is a gateway to personalized learning. It provides an authentic learning experience for learners and immerses them in experiences which gives them a sense of “being there”. The experiences gained through games that challenge social justice issues can potentially be transferred and applied to current and future real life issues. In order to effectively deliver meaningful experiences to students, gamifying education needs to be well-thought out and planned. Taking the risk to embrace this technology in classrooms requires support and effort from all stakeholders, however, the potential gaming offers to student learning is a future generation of lifelong learners equipped to contribute to society in meaningful ways.

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Alexander, J. (2009). Gaming, student literacies, and the composition classroom: Some possibilities for transformation. *College composition and communication*, 35-63.  Retrieved from ERIC database (EJ857821)

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