

Spirit of the game: Empowering students as designers in schools?

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Abstract

The aim of this paper and the one which follows is to explore how the potential of computer games may be taken up in schools to support learning engagement among students. It is not the intention of the papers to dismiss existing classroom practices or overlook accounts of innovative practices in schools; the papers' aim is to provide educators who are interested in exploring the use of computer games in schools with information and ideas about how these games may be effectively used to engage students in their learning. This paper questions whether the empowerment of students to create games for one another based on the school curriculum may address the insignificance of computer games in the sociocultural setting of the school. Both papers have been commissioned by Microsoft (Asia-Pacific) under the Partners-In-Learning Initiative. Under this initiative, Microsoft establishes partnerships with ministries of education, national and local government bodies, and other stakeholders to empower students and teachers to realize their full potential, mediated by information and communication technologies.

Wouldn't it be great if kids were willing to put in this much time on task on such challenging material in school and enjoy it so much?

James Paul Gee (2003) in 'What video games have to teach us about learning and literacy'

Since the advent of computer and video games, children, and even adults, have invested significant amounts of time in tasks which relate to effective game play. This revolution has begun with the simple two-dimensional arcade games and has progressed to what we have today—the virtual reality three-dimensional (3-D) multi-user role-playing game. The gaming community has long been aware of the high degree of commitment

shown by players to games. Social structures have emerged from groups of like minded game players that may take the form of competing 'clans' or may evolve as groups of committed coders who develop characters or whole new levels to the original game (Gee, 2003). Begg, Dewhurst and Macleod (2005) observe that most contemporary game developers are aware that players need to be suitably contextualized, need to feel consequential, and need to feel that the experience of the game is consistent, coherent, and intrinsic to their expectations. In return, the players spend a significant amount of time and money interacting with and in the world, instructing new arrivals to the game world, working to extend the boundaries in terms of the size and technical scope of the game, affecting the political, cultural and social fabric of the game world and, ultimately, informing the creators of the domain as to how to evolve the game itself.

In contrast, the learning activities in schools have not supported engagement of these gamers, who are often students in schools. Classroom activities have increasingly been driven by the development and implementation of nationwide curricular standards and an expansion of standardized testing (Darling-Hammond, 2004). Such a focus on standards, grades, and outcome measures are in direct opposition to the idea of designing learning environments that are more likely to engage students. Learner engagement is paramount to learning success; where engagement entails mindfulness, intrinsic motivation, cognitive effort and attention (Herrington, Oliver & Reeves, 2003). Harter (1981), in a series of studies, has found that the intrinsic motivation of students for school steadily declines at statistically significant levels from grades three to nine. He treats intrinsic and extrinsic motivation as negatively correlated and credits the decline in intrinsic motivation to an increasing dependence on extrinsic motivators such as grades. Intrinsic motivation is generally defined as motivation to engage in an activity for its own sake, whereas extrinsic motivation refers to motivation to engage in an activity as a means to an end (Malone, 1981; Pintrich & Schunk, 2002). More than two decades later, Lepper, Corpus and Iyengar (2005) show that extrinsic and intrinsic motivation may not be perfectly negatively correlated. In many of their studies, they have found that both intrinsic and extrinsic motivation for school steadily decline in a statistically significant manner over grades three to nine. One may have hoped that even in the face of decreasing intrinsic academic motivation, there may be at least an extrinsic framework that encourages these students to participate. These findings suggest that schools may have failed to create a learning environment that is conducive to learning engagement among students.

Harnessing the excitement and engagement among students playing computer games bears considerable potential for schools to capture the intensive engagement of students. Gee (2003, p. 5) in his book *What Video Games Have to Teach Us About Learning and Literacy*, remarks about this potential: 'Wouldn't it be great if kids were willing to put in this much time on task on such challenging material in school and enjoy it so much?' However, the history of educational technology has suggested that teachers will abandon media that do not fit the social organization of schooling (Cuban, 2005). Steinkuehler (2006) warns that if games are being used in schools that have been designed to reproduce existing power relations, then its impact may be questionable;

games are so compelling because they critique contemporary culture by allowing players to bend or temporarily dismiss social rules in order to try new ideas and identities. Researchers and teachers then need to be careful when bringing games into schools by designing learning environments to support the qualities of games that have made them so engaging.

The aim of this paper and the one which follows is to explore how the potential of computer games may be taken up in schools to support learning engagement among students. It is not the intention of the papers to dismiss existing classroom practices or overlook accounts of innovative practices in schools; the papers' aim is to provide educators who are interested in exploring the use of computer games in schools with information and ideas about how these games may be effectively used to engage students in their learning. This first paper transports readers into the world of computer games and examines how they engage students in out-of-school contexts but often fail to sustain this engagement in the school environment. This paper then questions whether the empowerment of students to create games for one another based on the school curriculum may address the insignificance of computer games in the sociocultural setting of the school. The change in role of students interpreting the school curriculum and developing resources for their fellow students may serve as a springboard to the transformation of culture and practices in schools. This question of students as designers will be responded to in the second paper with two scenarios being painted to portray how teams of teachers and game designers/developers support students in their design and development of computer games. Implications are then drawn from these scenarios to provide guidelines for the use of computer games in schools.

It has to be noted, however, that the development of computer games by students is only one of the many alternatives available for teachers to design engaging learning environments. The role of teachers is still the most pivotal in such environments; they have to understand and identify the opportunities of these alternatives for teaching and learning, design and implement teaching and learning activities that support and are supported by these alternatives, evaluating the impact of these alternatives, and revising and fine-tuning these alternatives based on the feedback from the evaluation. Therefore, this paper first examines the opportunities of computer games for learning engagement.

Learning engagement of computer games

Immersive environment

The prevalence of traditional didactic instructional practices in many schools may be the reason for learning disengagement. To address such a problem, classroom activities have to situate students within a context where they are able to see the meaningfulness and relevance of what they learnt. A meaningful and relevant context provides a springboard for inquiry, information-gathering and sharing, and reflection of theoretical concepts and relationships, and norms and practices. Students are then more likely to be both extrinsically and intrinsically motivated to engage in the learning activities. At the outset, most computer games set the stage or context for the students. In *Never-*

Winter Nights (NWN), a role-playing game (RPG) for the solo player or multi-players built around a huge medieval fantasy world of Dungeons and Dragons, players are told that NW is under the curse of an unnatural plague that has been defying a cure and they are entrusted with the fate of NW. In the quest for the cure, players set off on an adventure where they encounter characters that may support or hinder them in the construction of a cure for the plague. Some characters may train players in combat and spell casting skills and provide them with more information about the plague while other characters may fight players to prevent them from getting to the Waterdeep creatures that contain special reagent for curing the plague. This back story facilitates players' perceptions of the space as real, meaningful and situated experiences; and hence, enhanced their commitment to the challenging tasks in the game. As players' role is tied in with the back story, it gives them an emotional 'in' context and character role; a shift from an outside orthographic perspective to a first-person agent embedded in the gaming environment. Players may then develop an emotional attachment to the character within the space and become more engaged in the tasks.

In *Rollercoaster Tycoon*, players take on the role of a theme park operator who faces the challenges of building a state-of-the-art roller coaster and managing the facilities of the theme park. In *Guitar Hero II* (multi-player option is available), players jam at concert venues that grow in size as their rock career progresses. Using the X-Plorer® Guitar Controller, players may attempt to hit the perfect stream of notes (as they scroll down the screen) on a complicated solo or invite a friend to form their own rock band in cooperative mode. Such imaginary play situation, challenges and the players' roles are consistent with Leont'ev's (1981) purpose-forming functions of motivation; where the imaginary situation and role define the purpose-forming function of the motivation of the play activity. Moreover, the ability to act in an emotionally engaging simulated situation without the serious consequences that such action may have in the real world (the 'psychosocial moratorium' of Erickson) allow for repetition, improved performance, and more committed performances from players (Gee, 2003).

Learning by doing

These immersive environments of computer games provide designed play experiences for the players as they learn by doing and being (Squire, 2006). Moulder (2004) recounts an incident at the Game Developer's Conference where an elementary school student raises a rhetorical question: 'Why read about ancient Rome when I can build it?'. Play, as a curricular tool, has enormous potential for engaging children of all ages in deep learning. Vygotsky (1978) states that 'the influence of play on a child's development is enormous (p. 96) ... [allowing the child to function] a head taller than himself' (p. 102). Play may be thought of as a scaffolding activity that has the potential to engage children in issues and debates that are not addressed directly through participation in society and even less likely through the normal curriculum of schools. In its position statement on play, the Association for Childhood Education International (ACEI), states that 'play—a dynamic, active, and constructive behaviour—is an essential and integral part of all children's healthy growth, development, and learning across all ages, domains, and cultures' (Isenberg & Quisenberry, 2002). While play is generally

accepted as a key element of learning activity for young children, it has come to be undervalued in the education of even older elementary students.

The designed play experiences in computer gaming environments provide opportunities for players to enact as they become a more accomplished quester in *NWN*, a more profitable theme park operator in *Rollercoaster Tycoon*, and a hotter rock star in *Guitar Hero II*. Based on the information they have collected and the instantaneity of the feedback, players analyse, synthesise, and use critical thinking skills to play and execute moves to appropriate these roles. Various features and key characters in the games provide scaffolds for players to learn and grow within these roles. The scaffolds may direct players' attention to visual cues, promote their knowledge integration, and guide them to elaborate upon their thinking. In *NWN*, players travel to different districts in NW (Peninsula District, Beggar's Nest, Blacklake District and Docks) as questers to gather information about the WaterDeep creatures. In each district, players encounter key characters who will narrate to them the challenges that may lead players to the creatures. For example, when players enter the zombie-infested Beggar's Nest, they meet Captain Ergus who provides an overview of the district and Harben who relates two rumours (paths) to be investigated. Players may then choose one of the two paths to investigate. As players, they may also choose what skills and abilities they will develop as they voyage through the district. They may play the role of a crusading cleric who heals the sick and defend the helpless or a hulking combatant who protects the innocent and vanquishes the foes. Besides fighting skills and power of spells, players are expected to pick up and make sense of information along the way and act upon them appropriately (with support from tools and characters) to survive in the district. The final encounter in the district is with Gulnan, a tenth level evil Yuan-Ti Cleric with a host of deadly spells. If players defeat Gulnan, they will keep her black heart for completing the cure for the plague.

As players progress in the game, they become more knowledgeable and skilful, and hence, more equipped to take on challenges at higher levels. The assessment of players' knowledge and skills is by their performances. If players are in level nine, they will not be able to defeat Gulnan who is a level ten. These sets of knowledge and skills are picked up by doing and experimenting as an avatar in the gaming environment. However, the knowledge and skills are not limited to facts and procedures. Players learn how to 'be' in the gaming environment as the game character—perceiving, acting, thinking and doing as the game character. Such transformation of identity is very similar in orientation to teachers who attempt to create learning experiences for students to think and to act like a scientist, a historian or an economist. Unfortunately, such learning experiences in schools are still a rarity; schools are still being built on discrete bodies of facts with students memorizing them for tests and teachers training a set of desired responses.

Communities of practice

Computer gaming has often been portrayed by the mass media as a solitary activity. However, way before the popularity of multi-player gaming environments, the focus of computer games has always been playing against and with friends and family, observ-

ing the game play of other players, or sharing tips and strategies among players. In video arcades of the 1970s, it was common to see groups of friends huddling around a *Pac-Man*TM machine where they challenged one another and at the same time, provided advice and suggestions to one another. The main aim of the game is to devour all the dots in a level without being caught by the monsters. After clearing all the dots, players are awarded a medal of achievement and move on to the next level. The game provides players with a clear task, choice and immediate unambiguous feedback, defines roles and responsibilities and balances players' skills with progressive challenges. It provides an anchor to harness the formation of a community of practice—a sustained social network of *Pac-Man* players who share a common set of core values and knowledge, including a past history, grounded on common practices.

Such communities of practices became more connected and larger with the introduction of the Internet in the 1990s and multi-player virtual environments at the turn of the millennium. Synchronous and asynchronous online communication tools facilitate players to engage in collaborative tasks or to work collaboratively on challenges in a game. Such collaborations support the learning of players in the community where learning is viewed as a social process that involves building connections: connections among what is being learned and what is important to players, connections among what is being learned and those situations in which it is applied, and connections among the players with similar goals. In *NWN*, more than 6.5 million messages have been posted in its forum since its release in the second quarter of 2002. Many of the messages are related to getting tips or information about the game play. For example, player A posted a question about the criteria for the increased attacks per round of the characters. Within less than fifteen minutes, player A received two responses to his/her question. Another player posted a thread to consolidate tips, tricks and suggestions for divine spellcasting in *NWN*. In the forums in *Guitar Hero II*, the latest postings have been about petitioning for a lower price to download songs. The forums supports these communities of practices by providing a platform for players to interact with one another, instruct newbies, share tips, and inform creators of the domain about different aspects of the games.

More important, for many of the new generation computer games, players are empowered to create their own worlds. In *NWN*, players may choose to be a Dungeon Master (DM) where they will construct their own unique lands of adventure using the Aurora Toolset. They may control all aspects of the game that player will encounter on their adventures by creating encounters, creatures, settings, traps and story. The DM may then invite friends or other players into their land for the adventure and may interact with these players using different avatars based on the situation. Given the tools and structure to create their own world and experiences in games like *NWN*, players are increasingly more empowered to affect the politics, culture and social aspects of the games they are playing. This in turn informs the game creators on how to evolve the games to meet the needs of their players. If the former fails to meet up with the expectations of the latter, another game may come in or an entire industry may spring up to fill that void.

Why do computer games fail in schools?

From the above discussion, it is clear that computers games do offer many opportunities for engaged learning. However, educators who are hoping that these games will be a 'silver bullet' for the lack of learning engagement in schools will be disappointed. When computer games are being brought into schools, several issues arise: technical (lack of technical support, lack of time), structural (inflexible time-table, lack of professional learning opportunities), and cultural (teachers' perceptions of teaching and technologies). The first two issues are practical ones. For example, due to a lack of time, inflexible time-table, and a highly structured, discipline-specific curriculum of the school, a computer game may be introduced for an hour on Monday, students may be allowed to explore the features of the game for an hour on Wednesday, they may get to play the game for an hour on Friday, and they are expected to reflect and discuss about the game the following Monday. Such practices are not pedagogically sound or desirable for learning in schools. The real challenge of bringing games into schools though is not these practical issues; it is the cultural issues—changing the culture of schools to be organized more around learning rather than the current form of social control.

Computer games challenge the prevailing culture of schools where externally determined knowledge is packed clearly for teachers to dispense to their students. If bringing games into schools merely reproduce these power relations or knowledge transmission, it is unlikely going to be any significant increase in learning engagement among students. In order to take up the opportunities of computer games for engaged learning, schools need to transform their culture and practices by:

- Re-designing the curriculum around driving questions that are meaningful to students, such as 'Why are more and more governments spending a large proportion of their budget on addressing climate change issues?';
- Creating opportunities for different students with different needs;
- Re-organising the highly segmented school day;
- Leveraging upon the outside-classroom experiences and expertise of students; and
- Shifting assessments away from evaluative structures that function to support social reproduction and towards opportunities to support learning.

If educators design learning experiences based solely on their own vision, goals and circumstances, they may be merely imposing their set of values upon their students; engaged learning is unlikely to happen in such an environment. Quite often, educational games or games for education created by educators or textbook publishing houses smell too much like school. Although various gaming elements such as narratives, point system, and challenges and levels are integrated into the virtual environment, the environment is often a replication of the existing power relations in the school where teachers and textbooks are the fountain of knowledge and students are empty vessels to be filled with knowledge. Students are not empowered to make decisions and take actions about the political, cultural and social fabric in such environment. As a result, the opportunities offered by computer games for engaged learning are unlikely to be taken up in schools. It is only when students are empowered to take charge of their own learning by co-designing their learning experiences with teachers and other

students that they are more likely to engage in their learning process. One way of doing so is to allow students to be the designers of their own computer games based on their own interpretations of the school curriculum. This may be a first step towards challenging the nature of schooling. In the short term, it may not lead to a major revamp of the school curriculum and its mode of assessment; but in the longer term, it may create tidal waves of changes across the system. The question now is: Can students design and build games?

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