5-1-2009

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Trainee Teachers' e-Learning Experiences of Computer Play
by Pam Wright

Commercial computer games have great potential as learning tools as many require complex problem solving, theory testing, collaboration, and evaluation, all components of experiential learning (Gee 2003). Indeed, Schrader, Zheng, and Young ([2006](#)) argue that there are many benefits to be derived from the pedagogical use of commercial computer games, particularly massively multiplayer online games (MMOGs), which allow the user to assume a role and complete quests or tasks usually by collaborating online with other users. However, their research has found that many preservice teachers are not fully aware of the pedagogical uses and benefits of these games and suggests that teacher preparation programs need to incorporate opportunities for preservice teachers to experiment with and reflect upon commercial games. Similarly, Squire ([2005](#)) argues that teachers need opportunities to experience and reflect upon game use within the classroom and to consider how they can use games as learning tools.

This article describes one effort to use e-learning to provide situated-learning opportunities for trainee teachers to investigate the use of commercial computer games (as opposed to [educational computer games](#)) in the primary classroom. Detailing the results of an effort to encourage preservice teachers to look more closely at commercial games as teaching tools, I discuss the results of a study intended to investigate how learning design, facilitation, and scaffolding in an online environment can help trainee teachers think productively about the potential uses of commercial computer games in primary education.

Commercial Computer Games as Learning Tools

Many educators are already aware of the valuable learning experiences that educational computer games can provide. Yet, even educational games are often used only as extension activities, time fillers, or student rewards rather than as an integral part of the curriculum (Halverson [2005](#); Schrader, Zheng, and Young [2006](#); Prensky 2006). In addition, many educational games are limited in their ability to generate higher-order thinking; indeed, Marc Prensky argues that these games tend to be boring and repetitive, consisting mainly of drill and skill activities or, as he calls it, "drill and kill" (2006, 1).

Even preservice teachers who see educational games as a means to motivate children to learn do not frequently perceive the learning benefits commercial games may have to offer. As a teacher educator at [La Trobe University](#), my challenge has been to find an effective way of getting preservice teachers to evaluate and reflect upon the use of commercial computer games in the classroom so that they can consider ways to embed these games in their own teaching.

Although students complete coursework on learning technologies during the [Diploma in Education (Primary)](#) program, they refine their opinions on the use of computers in the classroom during their practicum experience where their thinking is largely influenced by supervising teachers, most of whom Prensky would call "digital immigrants" ([2001](#), 2). Many of these teachers have little experience playing commercial computer games, and they are frequently influenced by media hype surrounding cyber-safety and sensational journalism describing the violence and crime depicted in games such as *Grand Theft Auto*. With research into the pedagogical benefits of commercial computer games still in its infancy and a corresponding lack of evidence or examples as to how these games can be used in the classroom, supervising teachers and preservice teachers alike lack the tools to consider the potential classroom uses of such games.

The practicum experience reflects that reality. Preservice teachers consistently report that computer games

are rarely used during their teaching placements and that, when they are, the games constitute extension activities or rewards rather than essential elements of the curriculum. They also report that only educational computer games are used. In this context, bringing commercial games into the classroom may seem like risky practice, something preservice teachers undergoing an assessed practicum experience are unlikely to implement. As a result, preservice teachers frequently disregard or discard innovative practices during the practicum that they have been exposed to during the program's Learning Technologies course, citing the lack of encouragement or support for innovative uses of technology from supervising teachers.

In an effort to address this challenge, I implemented an online unit on gaming as part of the Learning Technologies course (Exhibit 1); students complete two-thirds of the unit before undertaking the first of two teaching practicums. The unit employs e-learning tools and techniques to facilitate learning and thinking about commercial computer games among trainee teachers. Over the course of two offerings of the unit, I assessed its efficacy in challenging students' thinking about the application of commercial computer games in the classroom.

Computer Games in the Learning Technologies Course

The Learning Technologies course is part of La Trobe University's year-long program leading to the Graduate Diploma in Education (Primary), which is administered on the Melbourne, Australia campus. The graduate diploma is the entry-level credential for primary-school teaching in Australia; completion of the program qualifies graduates for accreditation and eligibility for employment in government schools. All candidates for the diploma are required to take Learning Technologies.

Face-to-face lectures are still a regular component of the diploma program, which presented some challenges for me as I was considering how best to present gaming as a topic within the Learning Technologies course. Indeed, it quickly became apparent that the traditional lecture format would not adequately serve students' needs. I envisioned students watching quick bursts of games and concluded that lectures would enforce a didactic approach, offering little opportunity for interactive investigation and reflection on the games. Having considered the limitations of delivering the gaming unit in a traditional lecture format, I turned to e-learning for an alternative method.

Studies have found that it is vitally important for preservice teachers to be exposed to situated learning (Jones 2002); e-learning can facilitate situated learning for difficult material that may require modeling, simulations, and visualization (Ramaley and Zia 2005). In the same vein, Jonassen and colleagues (1995) suggest that constructivist principles can offer online educators opportunities to build authentic, learner-centered, collaborative experiences into their course designs. These experiences, in turn, support higher-order thinking, critical reflection, and experiential learning processes. However, as Gold (2001) asserts, the creativity of the instructor is the major determining factor in the success of Web-based learning. Therefore, the challenge facing educators is to provide authentic learning experiences and engage learners in a dialogic process that gives them opportunities to articulate their understanding (Petraglia 1998).

With these opportunities and challenges in mind, I decided that learning about gaming in an online environment could help our students to develop new perspectives, skills, and techniques. I expected that e-learning activities could provide students with opportunities for concrete experience, experimentation, and reflection—including the opportunity to try the games during the practicum experience, evaluate learning outcomes, and reflect on the uses of commercial computer games in their own classrooms—that were impossible in the traditional lecture format. The online lessons that formed the gaming unit were designed to help students learn theoretical principles while offering opportunities for experimentation. Learning activities within the lessons required students to research and try commercial computer games, evaluate those games, and then reflect via an asynchronous discussion board on how they might use those games in the classroom. The lessons included hyperlinks to reading material from major contributors to the field interwoven with

learning tasks and instruction. Students completing the unit via e-learning had the advantage of being able to share their experiences, knowledge, and suggestions for application in practice. Unlike face-to-face class discussions where typically only a handful of students get to share their experiences, discussion board posts allow all students the opportunity to share and pool their knowledge (Exhibit 2). This was especially evident in the discussion of how activities in some games fit with the Victorian Essential Learning Standards (VELS), which guide curriculum for all state schools in Victoria, Australia.

Analysis

I implemented the gaming unit with the cohort entering the program in February 2006. After the initial cohort (Cohort 1) had completed the unit, I evaluated the course and student discussion posts and made adjustments before the next cohort (Cohort 2), which entered in July 2006, took the course.

Women accounted for 30% of Cohort 1 and 64% of Cohort 2. Both cohorts had similar demographics in terms of age. The majority of students were 22 to 34 years of age with 4% of Cohort 1 and 6% of Cohort 2 being over 35 years of age. Although a total of 250 students from both cohorts were invited to participate in the study, not all students posted discussion board messages; the study thus involved 163 participants. Cohort 1 had a response rate of 63% (n=100) while the response rate of Cohort 2 reached 79% (n=63).

For both cohorts, discussion board posts were analyzed qualitatively using content analysis methods (Exhibit 3). Analysis was aimed at providing answers to the following research questions:

- What are preservice teachers' perceptions and beliefs around the use of commercial computer games in the primary classroom?
- What opportunities does online learning provide for experimentation, interaction, and reflection on commercial computer games in a postgraduate education diploma program?

Reshaping the Learning Experience

In my evaluation of Cohort 1's work on the gaming unit, I found that the students had mostly opted to evaluate only the games to which I had supplied links; they had not conducted research into other commercial games although they were directed to in the instructions for the unit. It was evident that more scaffolding was needed in order to engage students in higher-level cognition and guide their investigations (March 1998). In response, I made a number of changes to the course. After reviewing the literature on learning with games (Becta 2006; Sandford and Williamson 2005; Schrader, Zheng, and Young 2006; Squire 2005), I decided that students needed to see how games could be used, and I wondered whether the students' evaluations and reflections might differ if they were able to observe the use of computer games being modeled. I provided such models via YouTube videos of a teacher using games in his classroom (Exhibit 4), but students were not required to reflect on or discuss these examples specifically.

In addition, I made the directions for discussion postings more specific in relation to students' consideration of computer games within the curriculum and added a list of Web sites where students could download games or play online in an effort to encourage them to explore further. I also asked students to complete the research and evaluation activities in small groups rather than individually in order to encourage collaborative learning (Jonassen et. al. 1995; Huang 2000). I hoped that working toward group consensus would encourage students to consider their choices of games more carefully and help them share the burden of the research task.

Findings

Content analysis revealed that the themes raised on online discussion boards were similar for both cohorts. The major topics that emerged from the analysis of online discussions included

technological issues and frustrations ([Exhibit 5](#)); pedagogical considerations for game evaluation and
- personal opinions about the use of gaming in classrooms;
- peer interactions and collaborations, which mainly took the form of agreeing with the opinions of others; and

The themes discussed were broadly similar across cohorts. A large proportion of students from both cohorts displayed a conservative attitude toward the use of games in the classroom although this was more evident among students in Cohort 1 than among Cohort 2 ([Exhibit 7](#)). There were also some significant differences between the cohorts.

Cohort 1

Schrader, Zheng, and Young ([2006](#)) found the students in their study to be open to new ways of using video games in education; Cohort 1 in this study took a much more conservative approach in their reflections about computer game use in the primary curriculum. These students also revealed an unwillingness to explore various games; the vast majority of students in this group chose to evaluate games from the short list provided within the lessons. Few ventured further to search for and investigate games they might deem appropriate for classroom use even though this research was a course requirement. Quite unexpectedly, the discussion board postings also demonstrated a lack of theoretical basis for participants' assumptions about the role of games in the classroom. It appeared that the online discussion medium fostered a less formal atmosphere in which participants felt it was appropriate to make unsubstantiated or unsupported claims and assumptions about the effects of computer games on children ([Exhibit 8](#)).

About 92% of the students in this cohort were able to link learning outcomes in the games to curriculum standards although a large number of these could only envision using games as a time filler or extension activity; these findings were consistent with outcomes from previous research (Halverson [2005](#); Prensky 2006; Schrader, Zheng, and Young [2006](#)). Nearly a quarter of participants stated that they would never use computer games in the classroom and expressed concerns about such usage, some insisting that children are overexposed to computer games. One participant even suggested that the online game he reviewed ought to be banned from schools entirely, leading to a lengthy online discussion between students and the instructor ([Exhibit 9](#)).

The students' lack of vision about how games could be used to support and scaffold traditional learning and their reluctance to conduct their own investigations led me to revise the unit substantially before presenting it to Cohort 2.

Cohort 2

Cohort 2 tended to express more positive attitudes toward the use of computer games in the classroom. They also tended to express fewer of their own opinions and personal dispositions toward the use of games as learning tools, concentrating instead on the mechanics of how to implement and use them in the classroom ([Exhibit 10](#)). In the context of this research, it would have been interesting to hear student voices and opinions on the topic, but in real terms, this finding was encouraging in that it suggests that the students were no longer relying solely on personal opinions but were guided by theory and by authentic learning experiences. It would seem that students in Cohort 2 had become more open to the idea of using commercial games in the classroom and moved on to practical issues of implementation.

The group work and modeling that were added for Cohort 2 seems to have helped these students see

innovative ways to incorporate games into their future practice. Many students realized that computer games can promote inquiry and discussion. A handful of students from Cohort 2 mentioned how inspired they were by watching the YouTube video clips of Tim Rylands using Myst to enhance literacy (see Exhibit 4), suggesting that this model opened their eyes to innovative ways of introducing games into the curriculum. One student was so inspired that told me that he "rushed out" to scour eBay to buy a copy of Myst. Moreover, a handful of preservice teachers from Cohort 2 felt compelled to apply their learning experiences in their next teaching assignment and described to me how they used computer games in their classrooms, both in practicum and afterward (Exhibit 11).

A majority (just over 70%) of participants from Cohort 2 also discussed the interdisciplinary benefits of commercial computer games as learning tools, which may suggest that these students were more open than Cohort 1 to the use of commercial computer games in their future practice. However, this openness did not extend to MMOGs (Exhibit 12), a finding in line with the research of Schrader, Zheng, and Young (2006). Perhaps this is due to a combination of influences, including a lack of experience with these games and the influence of media and government pressure on teachers to ensure cyber-safety in the classroom. Until an assured safe environment or an educational platform is developed for this type of game, teachers will likely continue to shy away from their use.

Conclusion

My findings suggest that learning about commercial computer games online can be very successful, provided that instructional design, scaffolding, and facilitation are considered carefully. They also support the findings of Wright and Vongalis Macrow (2006), suggesting that preservice teachers not only need hands-on experience and opportunities to reflect on the educational uses of commercial games but also need to see such instruction done successfully before they can apply what they have learned in their own classrooms. Not only does e-learning afford students firsthand experience evaluating games for the classroom, but it also enables modeling and supports collaborative peer learning that incorporates reflection, discussion, and evaluation (Jonassen et al. 1995). In my study, e-learning provided preservice teachers with opportunities to investigate, experiment, and apply their learning in a way that is not possible in a traditional lecture class.

Overall, this study found that learning online can allow students to experiment, experience, and reflect, and it can be enhanced by a situated learning approach. However, the effectiveness of these activities is heavily dependent upon instructional design. For me, the study has highlighted the importance of the development cycle and the need for continuing reflection on the part of the educator. It also suggests that preservice teachers are able to recognize the potential for commercial computer games as a learning tool, but they need to see how these games can be used in the classroom effectively. The factors that encourage or prevent preservice teachers from using commercial computer games in their teaching constitute a subject for further research.

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