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Teachers' Perceptions of Video Games: MMOGs and the Future of Preservice Teacher Education

by P. G. Schrader, Dongping Zheng, and Michael Young

No doubt, the ills of American education (e.g., falling achievement levels, declining literacy rates, substandard math and science competency) made visible through high-stakes testing, international comparisons (Gisburg et al. [2005](#)), and school accountability will continue to put pressure on educators to adopt the latest technology for instruction and to upgrade their curriculum and pedagogy based on contemporary learning theory. Meanwhile, theorists who press at the edges of these trends not only argue that we have still not incorporated enough technology into our classrooms to make a difference (Cuban 2000) but also believe that we have not yet moved away from an 18th century notion of what it means to be educated (Schank 2004).

In this context, we agree with others (e.g., *Innovate* Vol. 1, #6, [2005](#)) that video games, in particular the genre of massively multi-player online games (MMOGs) such as *Everquest* and *World of Warcraft*, will emerge as a component of the revision of education in general and the updating of teacher education specifically. However, in order for the pedagogical use of MMOGs to become widespread, it seems logical that the perceptions of educators will need to recognize the full potential of such games as tools for teaching and learning. In this article, we evaluate preservice teachers' perceptions pertaining to the integration and use of video games for educational purposes.

Games and Education

The common perception of video gaming is one of arcade-style entertainment, and as such, it is difficult for many people to appreciate games' educational potential. However, it is important to consider several key facts. Video games are ubiquitous in popular culture. They have been the entrée for many into basic skills in reading and mathematics through drill-and-practice educational software such as *ReaderRabbit* and *Math Blaster* (Selfe and Hawisher 2004; Young, Schrader, and Zheng, forthcoming). Globally, the sale of video games generated \$9.4 billion in 2001 (Rhyne 2002). The MMOG genre alone amounted to approximately \$1 billion in revenue in 2003 (DFC [2004](#)). Moreover, video game play accounts for a significant proportion of recreational time (Jones et al. 2003). Lenhart et al. ([2001](#)) report that 66% percent of U.S. teenagers play or download games online; furthermore, teenagers play games for nearly four hours a week while 65% of college students report playing on a regular or semiregular basis (Lenhart et al. 2001; Jones et al. [2003](#)). Projections of increased access to and use of the Internet suggest that the figures for 2005 might be even higher (Fox, Anderson, and Raine [2005](#)). This data highlights the social, economic, and cultural significance of games for many students, including future teachers.

While several researchers describe negative consequences of video games ([Exhibit 1](#)), others suggest that increased use of video games as an entertainment medium provides an exciting opportunity to adapt games to educational purposes, addressing instructional goals from within highly interactive virtual environments. For example, Gee (2003) asserts that games can promote problem-solving, goal-related behavior, engagement and motivation, and virtual social networks by situating players in immersive digital worlds where they can freely move. Additionally, aspects of new literacies, such as multinational team collaboration and problem-solving, are manifested in MMOGs. Steinkuehler (2004), Squire ([2003](#)), and Young, Schrader, and Zheng (forthcoming) assert that this virtual context is of principal interest to educators; likewise, Barab et al. (2005) and Squire (2004) argue that MMOGs offer a rich environment in which gamers can communicate with one another, apprentice themselves to relative experts, accomplish shared goals, and take on increasingly central roles of participation in order to solve complex problems. These experts assert that this degree of interactive collaboration should be a goal of classroom education.

Such positive assessments of video games as learning tools are based on the recognition that gaming environments and learning environments already share certain attributes that can be further enhanced by designers and software developers. For example, Young (2004) applies nine principles derived from ecological psychology to describe the educational potential of video games; in turn, Young, Schrader, and Zheng (forthcoming) apply these same principles—which include issues of embodied cognition, learning by doing, transfer, and context—to design outcomes and goals in the specific context of MMOGs (Exhibit 2). These are principles consistent with contemporary learning theory that have not yet been integrated into most classrooms but are fundamental to MMOGs. A combination of the two—online multi-player role-playing and updated classroom learning objectives that target real world experiential learning—provides the basis for our conclusion that the integration of video games, specifically MMOGs, is a part of the future of teacher education and an essential element for immediate incorporation into teacher preparation and enhancement activities.

Meanwhile, students are already able to experience the educational applications of MMOGs (or more appropriately, Multi-User Virtual Environments or MUVES) through their own exploration of current gaming applications. For example, [AquaMOOSE 3D](#) is a desktop application that allows users to manipulate parametric equations in order to create artwork, solve puzzles, and share mathematical creations. [Quest Atlantis](#) is a teaching and learning application that makes use of an immersive 3-D avatar-based environment; in this game students, ages 9-13, travel to virtual lands where they select "Quests," collaborate online with peers and mentors, and build virtual personae in order to achieve social and ecological improvement in the mythological Atlantis. In addition to solving the problems collaboratively, students broaden their perspectives and views of the world through this game; the social improvement they seek to foster in the virtual realm thus overlaps with their understanding of the real world as well (Barab et al. 2005; Duffy and Cunningham 1996). Such an active process not only prompts children to embrace diverse perspectives but also is effective in building communities of learners across distances (Dede, L'Bahy, and Whitehouse 2002).

While researchers and students continue to explore such learning opportunities, teachers unfortunately have limited experiences with online role play games as instructional tools. Selfe and Hawisher (2004) describe how many tech-savvy adults experience video games like *Mario Bros.* and *Madden Sports* mainly as entertainment and as a reward for hard work. Because of their impoverished gaming history, most adults do not consider games as anything more than an incentive for good behavior (e.g., completing an assignment). This may help explain why some teachers do not either fully actualize or even understand their roles with respect to video game integration (Zheng, Young, and Gilson 2004). Adult teachers may have played games like *Half Life* and *Doom* but have not experienced games like *Quest Atlantis* (see Exhibit 3 for an illustration of the difference between a 2-D game and a 3-D game). If teacher perceptions about educational games continue to be informed by their personal experiences, the state of games in education is at risk of remaining unchanged.

Survey of Preservice Teachers

We conducted an informal survey of preservice teachers to evaluate their prior gaming experience (Exhibit 4). A convenience sample of undergraduate students enrolled in preservice teaching and credential programs in three different universities participated in this online survey during the 2003-2004 academic year. We based student selection on availability and the participants' involvement in similar teacher preparation programs. Participation was voluntary and involved either a component of their course requirements or a reward of extra credit. In every case, students were provided the opportunity to decline. A total of 203 participants (60 male, 138 female, 5 no report) completed the survey. Most of the participants (63.1%) were aged between 18-22; the next largest range was 26-30 (11.3%). These figures align with the most recent national averages reported by the U.S. Bureau of Labor Statistics for inservice education professionals (2004, table 9). The results of our survey were then related to current literature and research to reveal these educators' attitudes toward gaming in general and the use of gaming in the classroom.

The majority of preservice respondents had played games (76.4%), and of those individuals, most played at some point during each week (83.3%). The majority of these respondents played for less than one hour (45.8%) while nearly one fifth played for three or more hours per week (19.2%). Several (20.2%) respondents indicated that they had lost track of time while playing, while another 45.3% indicated that they had neglected other tasks in order to play.

While the age at which each individual experienced their first game ranged from 4 to 40, the majority (74.5%) of preservice teachers in this sample had their first experience between 5 and 10 years old. Further, 85.2% of preservice teachers reported experiencing their first game before they were teenagers. According to the data, these first experiences took place on legacy systems (e.g., Nintendo Entertainment System, Coleco Vision, or Sega Genesis) rather than newer, contemporary systems. Participants also reported owning older systems. Of the 203 participants, only 36.0% reported owning a current generation system like the Sony Playstation 2, Microsoft X-box, or Nintendo GameCube.

Although participants reported significant gaming frequency, most (89.8%) reported that they did not feel like they were part of a gaming community. Most participants (77%) preferred single player games, and the massively multiplayer online role-playing game genre was the least popular genre—with only eight participants (1.1%) indicating that MMOGs were their favorite. This statistic is possibly explained by the participants' age and the fact that MMOGs have only recently become a part of contemporary popular culture. However, more than half of the participants (52.2%) agreed or strongly agreed that games were important socially. What is evident from these data is that while this population has been exposed to video games since a very early age and values games for social reasons, most preservice teachers either have not experienced or no longer engage in the social aspects of gaming and gaming communities, specifically those relating to MMOGs.

As noted earlier, Selfe and Hawisher (2004) argue that experience with video games as entertainment or a reward influences adult perceptions of games in culture and education. Teachers' experience with video games as entertainment may mitigate their perception of games as educational tools. This data supports that conclusion. However, preservice teachers were able to recognize a distinction between recreational games and educational games. With respect to recreational games, study participants viewed [first-person shooter characteristics](#) such as graphics (56.2%), competition (36.5%), pace (34.0%), and authenticity (33.5%) as vital game characteristics. By contrast, participants most frequently selected higher level cognitive characteristics such as problem-solving (78.8%), clear rules (63.5%), authenticity (52.2%), and feedback (43.8%) as vital aspects of educational games. This data is encouraging given the fact that Barab et al. (2005), Squire (2004), and Young (2004) assert that both problem-solving and authenticity were facets of MMOG contexts.

While participants' educational experiences may be limited to recreational games rather than interactive, socially constructive experiences like *Quest Atlantis*, preservice teachers are open to new ways to apply video games in education. In particular, respondents viewed games as useful to establish a valuable learning context (71.4%), create virtual worlds (61.1%), and compare simulations to reality (66.5%). However, participants did not rate social aspects of gaming to be as important as issues of motivation. With respect to educational goals, the majority of responses indicated that preservice teachers valued games as a motivational tool (83.4%) rather than an important part of social life (51.3%). While more than half of those surveyed agreed that games are important socially, one might posit that this refers mainly to real world interactions rather than virtual world avatar-to-avatar interactions (i.e., a group of friends playing at someone's house rather than a community of online gamers). Perhaps because of their inexperience with MMOGs, the preservice teachers we surveyed did not connect the social learning done in online gaming with the common educational goals to produce collaborative problem solvers who can work well with others (e.g., in accordance with the recommendations established by the Secretary of Labor's Commission on Achieving Necessary Skills [SCANS] report [[1991](#)]).

Because of their experiences, it is understandable that many teachers continue to use games as a reward for

positive classroom behavior. Unfortunately, this practice does not at all capture the profound contextual richness, online interactivity, or complex social dynamics afforded by MMOGs. The use of games only as a reward contrasts with the tenets of contemporary cognitive science, which posit that learning is inherently social—that it is embedded within and results from the learning context (CGTV 1993; Kafai and Resnick 1996; Lave and Wenger 1991). Well-designed, engaging contexts should not require behavioral modification strategies to increase motivation or attention. Our findings suggest that preservice teachers have not yet adopted the view that MMOGs exhibit potential in the classroom.

Conclusion

While research has shown that MMOGs can be powerful tools to support educational goals—and while the experience of many students with MMOGs has already begun to reveal their potential as a medium of engaged learning—our survey indicates that teachers have not yet become fully aware of the content and pedagogical dimensions of such games. Influenced by their prior experience with games, most teachers do not see the immediate value of educational online gaming, gaming communities, or games as a communication tool but rather view them simply as rewards. The question remains: How can educational practitioners and leaders work to close this gap between potential and actuality?

Fortunately, a few educational initiatives have made efforts to demonstrate the social and interactive learning spaces found in MMOGs. Initial efforts include the Education Arcade (Jenkins, Squire, and Tan 2003; Squire 2003) and Stanford University's recent Media X "Gaming to Learn" Workshop (Steinkuehler 2004). These efforts invite researchers to collaborate and discuss games in education. With respect to practicing teachers, sites like [Tapped In](#) rely heavily on the navigation of a virtual space to afford professional development and collaboration among teachers (Schank, Harris, and Schlager 2002). Tapped In is an applied example of a virtual learning space coupled with an opportunity to discuss educationally relevant topics (including games).

Although our survey is limited in scope, the data does indicate that preservice teachers are open to new applications of technology and in fact consider games to be important educational tools. This suggests that they only need the opportunity to experience MMOGs directly in their training and personal lives in order to perceive the possible applications of such tools in the classroom. In this context, teacher preparation programs have a particularly crucial role to play. By incorporating MMOG and other gaming-related research into their curriculum and by providing teacher trainees with the opportunity to apply this research in their course design projects and other activities, these programs can help their trainees discover new strategies for effective implementation of these tools in their teaching.

Providing preservice teachers with these opportunities should expand their awareness of the instructional merit of video games as well as the important underlying theoretical foundations of learning in gaming contexts (see Young 2004; Young, Schrader, and Zheng, forthcoming). Although future research is still needed to determine why games are generally excluded from the curriculum, and although theoretical understanding of applied gaming in education continues to emerge (e.g., assessment), increasing teachers' awareness of and experience with these valuable tools will offer a greater opportunity to implement educational MMOGs in the future.

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