

Games and Learning

Digital games have the potential to bring play back to the learning experience

By **Diana G. Oblinger**

From a very early age, we learn from games and play. Cops-and-robbers or playing house are role simulations. Parents and preschool teachers use games to teach colors, numbers, names, and shapes; the process is drill and practice. Games engage us, capturing our attention. We willingly spend time on task. Although students in high school and college continue to play games, games rarely continue as part of the educational system past the early grades.

On a soccer field, at a table with a deck of cards, in front of a computer screen—games catalyze learning. Most games were not designed to be educational, yet they are immersive, experiential learning environments. Ignoring the educational power of games dismisses a potentially valuable learning tool. Digital games, in particular, carry enormous potential to draw students into a topic and help them learn information, skills, attitudes, and ways of thinking.

Digital Games and Education

Digital games are part of modern culture. Nearly all children play video games, and gaming is common in college, as well. Students play games while visiting with friends, listening to music, or doing assignments—and many play games during class. But games are not just for kids. The average game player is over 30 years old. In the United States, 50 percent of adults play games, roughly evenly divided between men and women.¹ Digital gaming is a multi-



billion-dollar industry and is expected to grow in coming years.

Most of us begin a discussion of games with some discomfort and with an incomplete experience base. Although definitions vary, digital games provide visual information to one or more players, accept input from the player(s), and use a set of programmed rules.² Unlike traditional games, the rules are programmed into the code, not described

in an instruction manual. The sensory interface and story add emotional appeal, as well. Digital games are complex, require collaboration with others, and involve developing values, insights, and new knowledge. They provide immersive virtual worlds augmented by a complex external environment that involves communities of practice, buying and selling of game items, blogs, and developer communities. In many ways,

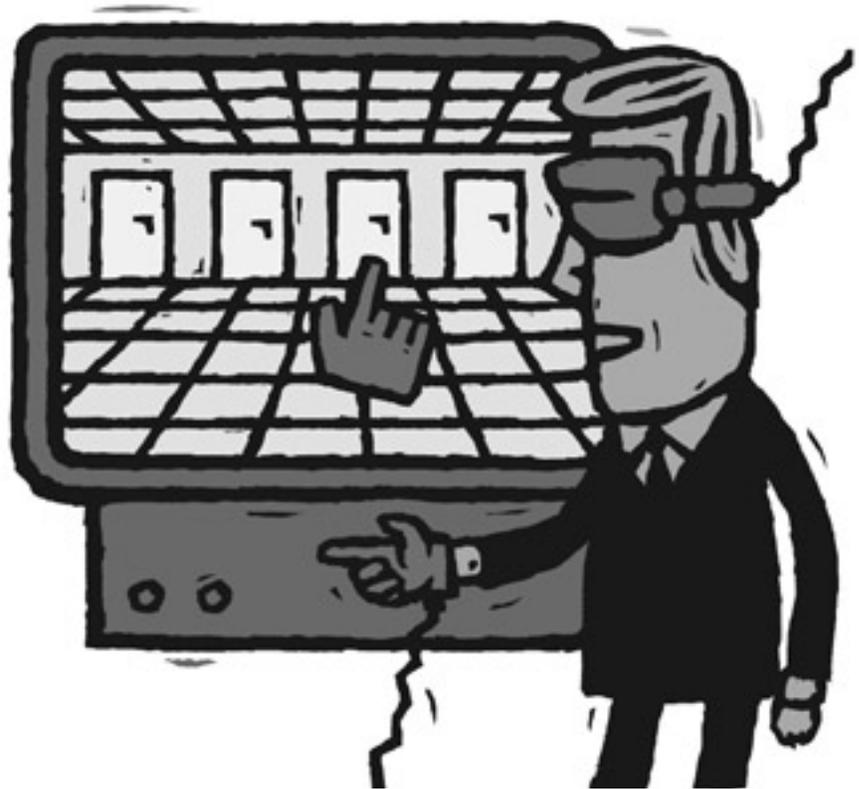
games have become complex learning systems.³

It is hard to understand something without direct experience, yet many approach games in education that way. Many educators neither play nor develop games. How much skepticism about the educational value of games is tied to a lack of experience with them? If we had the same experience base as a 15-year-old game enthusiast, would we view games differently? If we were discussing “virtual worlds,” “synthetic worlds,” or “immersive multi-user environments” rather than “games,” would our mindset be different?

Effective Learning Environments

Most educators are familiar with the world-to-the-desktop interface that computers provide, enabling users to access resources, experts, collaboration, and communities of practice. A different type of interface is the multi-user virtual environment, in which participants interact with computer-based agents and artifacts. These environments are psychologically immersive in ways that the world-to-the-desktop interface is not. Virtual environments and augmented realities create a sense of sensory and physical immersion resulting in one’s feeling “inside” an environment. Today, most multiplayer virtual environments are games. These immersive environments use authentic contexts, activities, and assessment. They also involve mentoring and apprenticeships in communities of practice. The result is a powerful pedagogy that allows for immersion and intense, extended experiences with problems and contexts similar to the real world.⁴ It may not be the game that is effective for learning as much as the immersive multiplayer virtual environment in which it is set.

Experience and reflection are important parts of learning. An ideal learning environment, according to Chris Dede, allows us to alternate between being “inside” an environment (fostering situated learning) and being an outsider looking in (fostering insights gained from perspective).⁵ Active learning based on immersive experience (real or simulated) that includes frequent oppor-



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tunities for reflection is both engaging and effective for a broad spectrum of students.

Games and play can be effective learning environments, argues Richard Van Eck, not because they are fun but because they are

- immersive;
- require the player to make frequent, important decisions;
- have clear goals;
- adapt to each player individually; and
- involve a social network.⁶

Games embody many attributes associated with how people learn: games are social and experiential, they require players to recall prior learning and develop

new understanding, and being successful depends on problem-solving.

Another critical element of games is the community that develops around them. Communities of users share ideas, and group problem-definition and problem-solving—not to mention a good deal of socializing—takes place. In fact, the description of a game community mirrors the definition of an educational community of practice. The community has a culture of learning; everyone is involved in a collective effort of understanding. Group members bring diverse expertise to the community, and individual members are valued for their contributions and helped to develop further as the group continually advances its collective knowledge and skills.

Teaching with Games

Although games can be effective learning environments, not all games are effective, nor are all games educational. Similarly, not all games are good for all learners or for all learning outcomes. The key is how games are used. Simply adding games to a curriculum does not mean they are integrated with it. Consider how best to add games to the edu-

cational tool set, blending them with other activities. Integration requires an understanding of the medium and its alignment with the subject, the instructional strategy, the student's learning style, and intended outcomes. Games can be integrated into education through a range of approaches such as allowing students to create their own games, integrating commercial games into the curriculum, or critiquing games to find what is incorrect or lacking in a game, which allows students to explore not just the subject but how the game is structured.⁷

Immersive multiplayer virtual environments let players participate in new worlds, inhabiting roles that would otherwise be inaccessible to them. They allow people to experience the ways a particular discipline thinks about and solves problems—as a physicist, an astronaut, a physician, an entrepreneur, and so on. In this way, games are coming to represent “distributed authentic professionalism.” Knowledge and skills are built into the virtual characters, objects, and environments. These types of games distribute expertise among the virtual characters and real-world players, requiring players to master the skills they don't have and integrate them with other members of the virtual community. They require the player to adopt a certain set of values and a particular world view that is connected to performing activities within a specific domain of knowledge. More than just games, they are networked communication systems with interactive chat, internal e-mail, and messaging. Requiring one to become a member of the community (or guild) exposes novices to the ways professionals deal with problems, mirroring the practice of becoming an expert.

Reintroducing Games to Education

Exploring games in education is inherently controversial. Despite the risks, however, scholars are beginning to study gaming as part of contemporary society, and an increasing number of degree programs in gaming have emerged. Skepticism still exists, but a growing number

of educators see the value games offer to the challenge of educating the next generation of students.

In discussions of digital games, development costs—commonly reported in the tens of millions of dollars—are often seen as insurmountable and are used to argue against the use of games in education. Game engines are increasingly available, however, reducing the cost of game development. Developers of augmented reality game engines have offered them to other developers, for example. Rather than creating the software for the game, the developer simply overlays his or her scenario on a generic shell. In the past year, developers of military simulations have seen their development costs drop as game development tool sets become more widely available.

According to Van Eck, institutions should also consider other implementation issues:

- Are computer laboratories available where students can play games? Are they appropriately configured? Are they available for the extended hours that game play involves?
- Is the right equipment available, such as headphones, speakers, and special consoles?
- Is support available for the game, both technically and in terms of game play?
- Are there instructional designers who can develop games?
- Is gaming integrated into the curriculum or just added on?⁸

Professional development and support are significant implementation issues. Students will need support for games, implying that help desk personnel must be prepared for common questions, procedures, and technical issues. Moreover, instructional or IT units may need assistance with licensing agreements and negotiating discounts.⁹

Perhaps the most complex implementation challenge will be cultural change. Using games or multiuser immersive virtual environments in education will require “unlearning” many unconscious beliefs, assumptions, and values about teaching and learning as well as the structure of education. Unlearning

requires higher levels of emotional and social support than traditional forms of staff development. Ideally, says Dede, it should take place in distributed learning communities so that learning occurs in context.¹⁰

Games are still in an early stage of evolution. Although they can be effective learning environments, not all games are effective nor are all games educational. Games are now being designed based on learning theory and research. Their effectiveness rests on the massively multiplayer immersive worlds they create, where learners “learn to be” and a social network surrounds the learner. The time has come for games to be reintegrated with education, ending a longstanding rift between work and play. *e*

Endnotes

1. R. Van Eck, presentation at EDUCAUSE Learning Initiative Annual Meeting, January 30, 2006, San Diego, Calif., <<http://www.educause.edu/upload/presentations/ELI061/FS04/Van%20Eck.swf>>.
2. NESTA Futurelab, “Literature Review in Games and Learning,” <http://www.nestafuturelab.org/research/reviews/08_01.htm>.
3. M. Prensky, presentation at EDUCAUSE Learning Initiative Annual Meeting, January 30, 2006, San Diego, Calif., <<http://www.educause.edu/upload/presentations/ELI061/GS01/Prensky%20-%202006-01-Educause-02.pdf>>.
4. C. Dede, “Planning for Neo-Millennial Learning Styles: Implications for Investment in Technology and Faculty,” in *Educating the Net Generation*, D. G. and J. L. Oblinger, eds. (Boulder, Colo.: EDUCAUSE, 2005), <<http://www.educause.edu/ir/library/pdf/pub7101o.pdf>>.
5. Ibid.
6. R. Van Eck, “Digital Game-Based Learning: It's Not Just the Digital Natives Who Are Restless,” *EDUCAUSE Review*, Vol. 41, No. 2.
7. Van Eck, January 30, 2006, op. cit.
8. Ibid.
9. Van Eck, “Digital Game-Based Learning,” op. cit.
10. Dede, op cit.

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