Computer games can teach schools some lessons

February 19 2010

Some parents might see video games as an impediment to children keeping up with their schoolwork. James Gee, however, thinks video games are some of the best learning environments around. He says that if schools adopted some of the strategies that games use, they could educate children more effectively.

"Commercial video games, the ones that make a lot of money, are nothing but problem-solving spaces," says Gee, the Mary Lou Fulton Presidential Chair in Literacy Studies in the Mary Lou Fulton Institute and Graduate School of Education at Arizona State University.

Gee shared his expertise on games and learning in a symposium, "First-Person Solvers? Learning Mathematics in a Video Game," on February 19 at the American Association for the Advancement of Science annual meeting.

Gee was one of the first scholars to examine the educational potential of video games. In 2004 he wrote one of the earliest books about how games use good learning principles—What Video Games Have to Teach Us about Learning and Literacy. This year he comes out with a new book, Women as Gamers: The Sims and 21st Century Learning. The book is co-written with Elisabeth Hayes, also a professor in the Fulton Institute and Graduate School of Education.

Gee says that video games optimize learning in several ways. First, games provide information when it is needed, rather than all at once in

the beginning.

"We tend to teach science, for example, by telling you a lot of stuff and then letting you do science. Games teach the other way. They have you do stuff, and then as you need to know information, they tell it to you," he explains.

Games also provide an environment that Gee calls "pleasantly frustrating." They are challenging but doable. "That's a very motivating state for human beings. Sometimes it's called the 'flow' state," he says.

Many game developers also invite players to modify their products through "modding." The developers share the software and encourage players to create new levels or scenarios.

"Think about it. If I have to make the game, or a part of the game, I come to a deep understanding of the game as a rule system. If I had to mod science—that is, I had to make some of my own curriculum or my own experiments—then I'd have an understanding at a deep level of what the rules are," Gee says.

Assessment is a controversial issue in education today. Typically, assessment happens through standardized testing. In games, however, learning and assessment are tightly married. The game gives constant feedback and collects information about players' performances. For example, the massive multiplayer online game World of Warcraft, with 15 million players around the world, is completely standardized. The company that created the game has collected incredible amounts of information about the players and put it into completely statistical terms. Gee adds that integrating assessment and learning is less expensive than supporting a separate testing industry.

The idea that educators can learn from the gaming industry is becoming

increasingly popular. For example, in November 2009, President Obama announced a campaign to improve science, technology, engineering and mathematics education. As part of the campaign, the Macarthur Foundation and several technology companies have launched a competition to develop video games for teaching science and math.

Educators do not need to use actual computer-based games to incorporate these educational principles, Gee says. "This type of learning that games do I call 'situated learning,' because you're situated in an actual problem-solving space. Situated learning can be done with or without a game. Good teachers have always done it."

Provided by Arizona State University