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The Learning Game - Researchers Study Video Gaming Principles that Apply to Education

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September 21, 2003

The Wisconsin Technology Network recently interviewed two University of Wisconsin-Madison researchers about their work in games and education, and how the principles behind learning a game can be used in academics. The first interview is with Dr. James Gee.

James Gee, Ph.D., is a professor of Curriculum and Instruction in the School of Education at UW-Madison. He is the author of "What Video Games Have to Teach Us About Learning and Literacy". Dr. Gee received his Ph.D in linguistics from Stanford University in 1975.



James Paul Gee

WTN: Why do you think games are important for learning?

Gee: If you think about it, games have an interesting problem. They cost a lot of money to make and they are pretty long and challenging. They can take up to 50 hours to play. But if a company couldn't get you to learn that game, they'd go broke. They have this classic problem that schools have: How do I get somebody to learn something that is long and difficult and takes a lot of commitment, but get them to learn it well?

As a result, I argue that games are good learning machines. They have a lot of good principles built into their designs to get somebody to learn them and learn them well. Those principles are actually ones that research in cognitive science has shown works, not just in games but also in other forms of learning too, but there not much in evidence in schools. I think games are good for learning in some sort of catalyst-Darwinian way, but that we can learn a lot about how learning works, especially for younger people who are attuned to that type of learning. They have played so many games and also been embedded in the culture that games come from, so they are used to learning that way. That's an argument that games can teach you about learning, not necessarily that we have to learn through games.

I argue in my book that you can set up science instruction when it's not a game in school, but still use some of the same principles of learning involved in games. But, because games are good at delivering this, there is also the option of building games for education. Games are heavily motivating. They teach people to think about complex systems to solve problems in a complex world. They deeply recruit people's identity because people take on an identity. If you wanted someone to learn science, you want him or her to take on the identity of a scientist. How do you think like a scientist? How do you value like a scientist? How do you talk like one? Games, of course, get you to do that. You take on some identity you don't have and you try to grow into that identity. That's the argument, we can learn about learning from games, but also games can be good tools for getting people to learn.

WTN: Have you created any games, or do you mainly research games?

Gee: My book is essentially about the learning principles that are in games. Kurt Squire, who we just hired, has worked on designing games. I am equally interested in pushing the learning principles not just the game. I think that it is unlikely that games alone will be a panacea for schools. But I do think that the learning principles that are in schools today are still based on drilling skills, testing, especially with the new agendas from the government, that deeper learning, conceptual learning, the sorts of learning that can go on in games, you don't see as much in schools as you used to. I am interested in accelerating kids' learning through the principles that games can use and at getting games in the schools.

WTN: What do kids learn from games?

Gee: From commercial games, they are learning skills that I think are very important for the modern world. They are not content like science or chemistry, but they are learning how to think about complex worlds. One very important skill is learning to cope within the modern world, which is full of complex systems. The environment is a complex system. Everything interacts with everything else. If you don't think about it as a complex system, something you do in one place can have very bad consequences someplace else. There are all sorts of unintended consequences. Most of the modern workplaces are very complex systems in which you have to interact with a lot of people and a lot of other things going on. In modern workplaces the workers understand the whole work place is a system. How does what I do at this point impact what you do and what happens in the whole business? Games are complex worlds. They make you think about the decisions you are making. How do they impact on this world? How do they impact on the history of my actions?

Specific games can get you to think about other stuff, like history. It is a pretty deep understanding of history to understand its relationships not just a set of facts that had to happen. History is a complex system. What makes the game compelling is that you didn't start the game to learn a specific thing. The game gave you certain goals and you want to achieve those goals. That's what makes it entertaining; you like the world you are in. You all of a sudden are playing a character with goals in that world to make you successful and then you are motivated. So, the key to learning is not, to me, to set up the game to say, "Hey, your goal is to learn chemistry." It's to get some other goal that you really want to achieve that's really compelling to you in that world and to do that goal, you have to learn some chemistry. Or to be the sort of person you want to be in that game you have to learn some chemistry. Then you are drawing on what is motivating about being in a foreign world.

What's particularly compelling about games is that they get you to be in a different, new world and be a different, new person, and that's why little kids like them. There are commercial games on the market that we could use in schools tomorrow. The technology has a tremendous amount of potential, for all of the reasons I have said, both to be used in classrooms and certainly by parents who are using computer games at home to accelerate their children to get them to think about how design works, to get them to think about how these worlds are designed, how they manipulate you, how you solve problems, how you think through those problems, how to use language about the game.

In our research, when we watch kids play games, they don't just play the game. If they go play a game like Age of Mythology, they go get books on mythology, they go on websites and sometimes those websites are way over their head, language wise, yet they read it anyway, they want to know it so bad, they read material that is over their head. The game is really part of a whole curriculum for the kid at home. A lot of research has shown that kids multi-task with the game. They read stuff on the game and they talk to their friends about the game and they play it together. It is part of a whole package. I think more privileged families are really beginning to realize this stuff accelerates your kid at home and then they go to school and the kid is good at keyboarding. Again, the families that are doing it are not saying it's good because 'Johnny is learning 12 important facts'. They are saying 'Johnny is learning how to think, how to design and how to be active in getting information and knowledge.' It is more important to know how to learn proactively than it is to memorize a set of things once and for all.

WTN: Is the university creating any games for learning?

Gee: The UW, now that we have hired Kurt Squire, will be part of consortiums with other places that will create games. Games are expensive to produce, so we will be part of projects, that we are just getting involved with, that will bring together academics that are experts in learning and game designers. I think game designers know a lot about learning because they have to get people to learn the game, but they normally don't communicate with academics. We have just started the game research laboratory and one thing we will try to do is to get educational psychologists, who may not have any interest in games, with game designers to begin to talk together about learning and how learning works.

One of the things we argue is that human beings, outside of school, usually like to learn. For most people, learning is pleasurable. In fact people stop playing games if they feel they are not doing anything different or learning anything new. Even game developers know that it is good for us if we can keep the person engaged with their game feeling that this is something new here and there is still learning and growing in that game. So, game developers are interested in learning and of course educational psychologist are interested in learning, but there hasn't been a lot of talk between those two communities.

WTN: Will the games be used at universities in the future?

Gee: Yes. There is quite a big push. Probably we will see games start their academic careers in colleges. I think that people realize that high school and college are the forms of education that are the least in step with current kids. People sit in a lecture with 100 other people, when we know that they can't retain verbal information very well. I think that college administrators know that those forms of learning are out of step with the clientele. I think that is fueling a big interest in having game technology involved in college.

WTN: Do you think that games can have a negative impact on learning?

Gee: Absolutely. If you are passive with any technology, if you just do it and don't think about it, then it is not good for you; it is basically wasting your time. If you are doing it proactively, you're thinking 'how is this game designed? 'Why are they getting me to do this?' Or "How can I make this game fit with what I want to do with it?" Good games invite you to do that. So, it really comes down to building the game into a system where you are forced to think about its design and relate it to other stuff. Games know that 'yeah we are going to give you this information, but we are also going to give you the world to support this information.' You should be able to get information just in time and on demand in an environment where you can see what it means in a multi-modal sense. See it, and hear it, and be able to read it, be able to do stuff with it in multi-modal ways. Then humans retain that information.

James Paul Gee, a reading professor at the University of Wisconsin-Madison, is the author of 'What Video Games Have to Teach Us About Learning and Literacy'. Read his recent column in Wired Magazine on "High Score Education" at <http://www.wired.com/wired/archive/11.05/view.html?pg=1> Also related article titled, "Educators Turn to Games for Help" at <http://www.wired.com/news/games/0,2101,59855,00.html>.

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