Games + Learning

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Researchers and game developers are changing the way people look at video games — and education

Shelby Anderson

Something special is taking place on the University of Wisconsin-Madison campus that may be unique to Wisconsin. At the Wisconsin Institutes for Discovery, researchers, education experts, and game developers are teaming up to produce advanced educational video games.

"We're creating a lab where educators, learning scientists, and game developers are working collaboratively and building educational materials — that's pretty rare," said Creative Director Kurt Squire.

Their work is already receiving national recognition and changing the way people think of video games. One of their best known games, Virulent, which is available for free on iTunes, is formatted for the iPad and gives players the experience of what it takes to infect a cell, replicate, and escape to infect other cells. Along the way, students learn how viruses work.

"Our vision and goal here is to help take science out of the labs and put it in the hands of everyday users," said Meagan Rothschild, a media design and community building specialist.

Exploring New Perspectives

The Wisconsin Institutes for Discovery is working on several games, one of which is Trails Forward. The game allows the users to explore land-use issues in northern Wisconsin. The users can chose to play from different perspectives, such as a housing developer, logger, or conservationist. Players can buy or sell land and make choices about what to do with the land they own. The game allows players to see the long-term effects of land-use choices.

In addition to teaching the player about the details and science behind land-use, Ben Shapiro, research associate, says the game also allows people to view land use through different points of view.

"We want to create a place where peoples' perspectives are represented but we also want to allow users to play from the point of view of others," Shapiro says.

Learning Ground

One of the advantages of video games, like Trails Forward, is that they offer a format in which students can explore and test concepts.

In the Virulent video game, students can experience what viruses can

and can't do. Alternatively, Rothschild says it is ok if a student fails in a video game. Failure in a video game is part of the process and excitement of playing the game and learning the concept behind the game.

Expanding Notions

The potential behind educational video games goes beyond learning concepts and ideas. Squire said the games are designed so that if a student reaches a certain level, that means they understand the concepts introduced in that level of the game. Since the games are played on a computer or hand-held device, this data can be easily collected and used by educators to determine how well a student understands whatever concept or lesson the game teaches.

"You can get a good idea of where kids are at," Squire said.

Another project in progress at the Institute is attempting to stretch perceptions of video games even further. In the game Anatomy Pro-Am, one feature of the game has users identify and diagnose cancer tumors.

Shapiro said that in the real world, doctors' diagnosis of tumors can vary. He said there may be a future where patients' scans could be analyzed in the game by players and used by doctors as a kind of second opinion. Of course, there are many barriers to establishing such a feature of the game but it still illustrates the kinds of possibilities that are available through educational video games.

In the very least, Shapiro says, games like Anatomy Pro-Am, will interest students in the medical field and perhaps give students the confidence to pursue such a career. Preliminary testing, Shapiro said, showed that girls who played the game had increased levels of confidence that they could pursue a medical career.

"Our hope is to inspire youth and to possibly get them to consider building careers in the sciences as they grow up," Shapiro said. ■

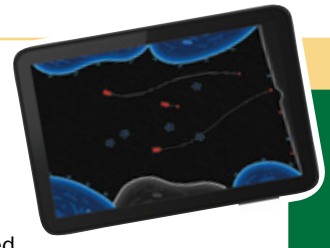
Anderson is editor of Wisconsin School News.

See It
AT THE CONVENTION

Researchers and game developers from the Wisconsin Institutes for Discovery will be in the Exhibit Hall at the 91st State Education Convention. They will be hosting a special exhibit showcasing some of the video games and research featured in this article. There will be tablet computers set-up where attendees can try educational video games like Virulent and Citizen Science that engage players in roles that take them inside the worlds that captivate scientists every day. Attendees will also be able to talk to researchers about upcoming projects and partnership opportunities.

Visit wasb.org/convention for session descriptions and registration.

Be Part of the Game Play



The Wisconsin Institutes for Discovery is looking for school districts that are interested in establishing a partnership with the Institute to participate in the development and research of educational video games. The Institute won a National Science Foundation Discovery Research K-12 grant to create a series of educational video games about science as well as to create data-analysis tools that will empower learners, teachers, and parents to understand how players are learning inside the games.

Data about how players are progressing through the games, including what they are learning and who they are learning with, will feed the Institute's research, which will be used to create tools to help learners monitor their own progress as well as inform teachers and parents about players' development.

Interested school districts should stop by the Wisconsin Institutes for Discovery's special booth in the Exhibit Hall at the State Education Convention to learn more. □

THE GAMES

- **CITIZEN SCIENCE,** a role-playing game about the history and biology of Lake Mendota.
- **VIRULENT,** a strategy game about viral infection and immunity.
- **TRAILS FORWARD,** a massive multiplayer role-playing game about Northwoods ecologies and economics.
- **ANATOMY PRO-AM,** a game where players learn about anatomy and physiology and help doctors to more accurately analyze cancer patients' data.
- **REGENERATE,** a game where players will use induced pluripotent stem cells to treat simulated injuries and disease.