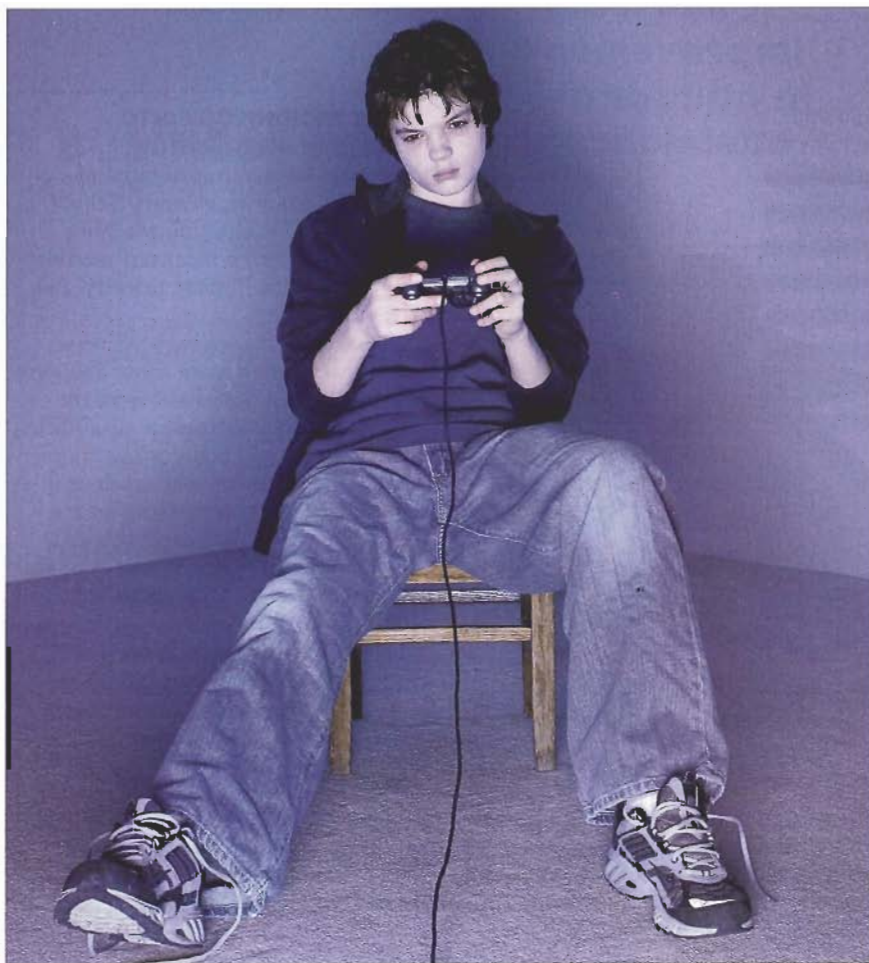


Gaming for Good

Digital media professor Jan Cannon-Bowers believes that video games can make curricula stick as long as you have the right attitude and application.



Parents and educators are accustomed to watching kids spend hours playing video games. The most popular games seem to have an almost magical quality—they can capture and hold the attention of kids for unprecedented amounts of time. So why not try to use those magical qualities to engage kids in educational content? In fact, students are already learning from games—even if inadvertently. Many of my students can recite

detailed historical facts about the Roman Empire—information that they did not learn in school but rather in the course of playing video games such as *Rome: Total War*. According to one fan, “You have to know a lot about a country to conquer it.”

Examples such as this one abound and make me think it is possible to deliberately include instructional content in video games. If kids can learn about the Roman Empire by playing

a game, why can't they learn math or science or citizenship?

Still, the effectiveness of video games as learning tools is unclear, placing them in danger of suffering the same fate as other types of instructional technology: much potential but little meaningful implementation. It is up to educators to know how to avoid this outcome.

WHY ALL THE HYPE?

Personally, I am delighted that a growing number of educators share my enthusiasm for video games as teaching tools, and there are numerous valid reasons for our excitement. Perhaps most obvious is the argument that good games have the power to engage players for hours on end. From a time-on-task perspective, we would have to expect students to learn when interacting with quality content for maybe five or six hours at a time.

But beyond the motivational aspects, video games offer other advantages over more traditional instructional approaches, all of which are grounded in research literature about how people learn. Consider the following:

- In an immersive game, players learn in context by interacting with objects within a world. This type of experiential learning is consistent with an anchored instruction approach, in which learners are able to make connections among concepts and build mental models of a domain.
- Games provide a model-based environment to foster complex reasoning. Students are able to manipulate otherwise unalterable variables, to view phenomena from multiple perspectives, to observe system behavior over time, and to draw and test hypotheses.
- Well-designed games provide the player with constant challenge. Small tasks are embodied in a larger achievement, and goals are concrete and immediate.
- The result of negotiating successive, proximal goals is that the game generates a feeling for students of constant accomplishment. Likewise,

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it provides a continuous source of feedback so that players know where they stand.

- Game play is self-regulating. Players are motivated to accomplish the next challenge and will readily acquire the new knowledge required to do it.
- Many games require a repertoire of problem-solving skills. As such, it has been argued that games teach critical thinking that can generalize to other contexts.
- Gaming is a social phenomenon and often occurs in distributed social groups that resemble communities of practice. These communities may become excellent learning environments.

WATCH FOR RED FLAGS

Despite my enthusiasm for the potential offered by this medium, it is not guaranteed that video games will turn out to be a viable instructional alternative. But if educators address the following concerns early, issues can be resolved before they become a problem.

PITFALL NO. 1: Adapting games to accomplish learning objectives for which they are not well suited or rushing to field games that are poorly designed. Either of these approaches can lead to a familiar scenario—unbridled excitement about a new technology, followed by a few well-publicized failures and then abandonment of the technology. To prevent this situation, consider how the game is designed. Are sound instructional approaches considered? Does the development team include instructional or educational design experts? Are appropriate evaluations planned? Of course, the most compelling evidence that a game will be effective is empirical data demonstrating its success. Despite the difficulties in obtaining such data, a few early studies will be crucial in establishing the credibility of games as serious instructional devices.

PITFALL NO. 2: Failing to bear in mind the needs of the teacher and classroom when developing educational games. We've all seen this happen. A new technology, no matter how

good, fails because it cannot be readily incorporated into the classroom setting. One of the key issues with this concern is the teachers' comfort level with the technology. In the case of video games, this may be even more acute since many teachers are not gamers themselves and are not familiar with games. I find that even the fine hand-eye coordination and dexterity that a young gamer effortlessly displays are daunting to a teacher. (In my case, those skills seem impossible to master.) We can overcome this obstacle and give teachers a chance to understand the rationale and instructional value of the game, even if the attractiveness of game play itself is not obvious.

PITFALL NO. 3: Accepting the attitude that "if students are having fun, they can't be learning." I don't think that many modern educators hold such an extreme view, but the idea that video games can be effective in teaching is likely to meet with a fair amount of resistance among educators, policymakers, and parents. This reaction is understandable, because some argue that video games are inherently bad for kids. For the most part, those arguments are associated with violent content, questionable moral content, and extent of usage. But good educational games need not, and should not, be violent or morally questionable. If a young person is whittling away hours playing a video game, having fun but learning important science content in the process, it seems to me that we should consider that time well spent. Ultimately, when studies show the effectiveness of video games in learning, critics will have less to say.

THE WAY AHEAD

For video games to reach their potential as teaching tools, several things need to happen. First, we as educators need to be realistic about what instructional objectives video games can and cannot accomplish. The notion that video games will replace traditional classroom teaching is simply absurd. Second, well-designed studies need to clarify how and when games

might improve learning. Specifically, more investigation is needed to determine how various gaming features affect motivation and learning so that these aspects can be incorporated into game development efforts. We need to resolve whether learner-specific factors (such as gender differences in video game interest) affect the games' ability to teach. Little scientific research has been done in these areas.

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Much more is needed.

On the development and implementation side, educational-game development teams must include the right mix of gamers and educators—both instructional design experts and teachers. Questions of how the game is incorporated into traditional instruction should be addressed early in the process and used to guide development. If successful, these initial practices can help to define deployment models used to inform subsequent efforts.

Finally, teacher development must be considered from the get-go. Teachers must understand the value and potential of video games and how best to use them to support their curriculum.

I am optimistic about the future of video games in education. Any barriers can be overcome, and we can take advantage of the motivational qualities of video games to entice learners with exciting, challenging content that they might otherwise be unwilling or unable to engage. @

Jan Cannon-Bowers is an associate professor in the School of Film and Digital Media at the University of Central Florida. She leads a multidisciplinary group of researchers interested in developing games and simulations to improve learning in education and training.