How Computer Games Help Children Learn

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Foreword by
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Are today's schools preparing our children for tomorrow's world?

We do a better job today at teaching the basics. We have standardized our curricula and standardized the tests we use to make sure children can do basic mathematics and can read basic texts. But these days simple math and reading skills will, at best, get you a low-level service job, because standardized skills are not what they once were. Young people today need more. Much more. Even the capacity to learn new things quickly and well, important though it is, is not enough.

Young people today need to be able to use their learning muscles to innovate and create, and ultimately to adapt and transform themselves several times over in one lifetime. They need to be tech-savvy if they are going to have any hope of a secure future. This was not true for the Baby Boom generation. For Baby Boomers like me, being able to read books and engage with the liberal arts— while silently fearing math, science, and complex technologies—was, by and large, all right. But not anymore.

What does it mean to be tech-savvy? It means thinking that learning math and science and mastering new technology are completely natural, normal, and nonthreatening—even cool—because today science and technology are part of everything we do. Science isn't just in the lab, it's all over the Internet and the news. Art is digital, and many artists today are technical whizzes. Kids use mathematical and design thinking to reprogram the video games they play, modifying them to their own tastes and to challenge their friends.

These days anyone under thirty swims in a sea of technologies. They are networked around the world with people of different ages, races, nationalities, and genders: witness any raid group in the phenomenally popular massively multiplayer game *World of Warcraft*. Haven't heard of it? Then you fail to have what is,

today, basic cultural literacy for young people across the globe—those same young people we want to educate and prepare for the future.

Our world today is full of complex—and dangerous—systems. Hurricane Katrina produced a "perfect storm" of controversy when global warming and poverty in the new global world combined with political failure at all levels. Natural disasters, global trade imbalances, and even international terrorism are problems where only the tech-savvy—only people who can link media, images, and design with science, math, and technology; only countries with people who can think about how to use new technologies in new ways—will survive. Our response to threats like these depends on innovation as well as advanced technology. Only those who can use technology to its fullest potential will be able to protect themselves, their families, and their country.

Are schools preparing our children to be tech-savvy?

The evidence, as far as I can see, is that many young children today are learning more about art, design, and technology from their video games and other digital technologies than they are from our technologically impoverished schools. Many of these kids don't just consume but also produce their own videos, animation, fan fiction, game modifications, Web sites, blogs, news commentary, and technical guides—sometimes ninety-page, single-spaced, highly technical strategy guides for video games.

But the fear—especially from older generations—is this: What about all that school content, all those important facts and dates that show up on school tests? Are kids going to know that stuff? Or are they going to be lost in a haze of networked technologies?

Here's the sad fact about that old-time school content, all those facts and equations on the tests: We have known for years now that most of the kids who can pass these tests—physics or social studies tests, say—cannot actually apply their knowledge to the real world. They can't use the rote learning and standardized skills they got in school to think in innovative ways. And that is nothing short of dangerous for a developed country like the United States in our high-tech, risky world.

David Shaffer has a radical answer. Radical, yes, but at the same time deeply conservative. He says: Let's get kids to learn not just to pass tests but to be able to solve problems in the real world, even to be able to transform that world. Let's do this in such a way that all kids can become tech-savvy innovators. In fact, while we're at it, let's use the best of what we know about video games and other

powerful digital technologies that are already teaching our children. Let's use these technologies to enhance deep learning for content and skills we value in school and in society.

Technology of any sort, including video game and simulation technologies, is not adequate all by itself for deep learning. Shaffer shows us that we need to build these technologies into rich and well-designed learning systems. And he shows us how to do it.

What Shaffer asks us to consider is this: Take a profession—say architecture, or journalism, or engineering, or urban planning, or even video game design—and consider these facts. First, people in these professions know how to use skills—reading, writing, design, communication, research, and a bunch of other school-based skills—to solve real problems. Second, they know how to innovate. And, third, they know very well how to educate—to apprentice—their new members. Each profession owns and operates a tool kit of knowledge, skills, and values—what Shaffer calls its "epistemic frame"—that it uses to look at and act on the world in a distinctive way. If you want to look at and act on the world in that way, you have to master the tool kit.

So Shaffer proposes a recipe for a new pedagogy: If we can entice kids to role-play such professions, they'll get school-based skills and learning for innovation all in one go. But what would entice them? Here is Shaffer's brilliance: Let them play the game—the game of one or more of these professions. Let them take on the identity or role of a professional. Let them produce the products professionals produce—products they *can* produce thanks to new digital technologies. Let them take ownership of knowledge.

But Shaffer's games are special. They are not just virtual worlds, like the game *SimCity*. These games are, as Shaffer describes, "augmented by reality." Kids go back and forth between the virtual world and the real world as they play. When they redesign a city as urban planners, it is their city. They can walk the streets of their town in both real space and in the virtual world. When they write news reports as journalists, the stories are about the world around them. They walk the walk and talk the talk and, in the process, master the tool kit. They come to see the real world in a new way.

But the tool kit is, lo and behold, replete with school-based knowledge and skills, with tools for innovation and, in almost every case today, with technical

skills and technological devices. You can't play these professional games without using, over and over again, lots of basic skills, facts, and information: the content of school tests. These things, which are in the foreground at school, come for free in Shaffer's epistemic games. In these games the focus is on solving problems by using the tool kit of a professional role that you think is "cool" and definitely worth inhabiting—games that you want to play because you want your shot at re-planning your downtown, facing an emergency like Katrina, or straightening people out on the science behind cloning.

But kids—middle school kids, or kids even younger—being professionals? Is Shaffer serious about this? Well, kids today already do something pretty similar when they play some of their video games. There they have to take on the skills and values of their avatar to transform a specific virtual world in distinctive ways to accomplish goals. Popular games like *S.W.A.T 4* and *America's Army* work this way—these are commercial games where you have to think like a professional in order to win the game.

What Shaffer shows so convincingly is that today's digital technologies— and research from the learning sciences—let us place kids in the shoes of professionals who don't shoot and kill, but instead transform the world for growth, development, justice, and survival. Why? Not for career management—though there's no harm in children getting to see early on what some of the alternatives to service work might be—but for learning beyond the basics and beyond standardized skills. For learning real problem solving and innovation.

Now, I said this is radical, but also a deeply conservative vision. It already sounds pretty radical, so how, for heaven's sake, is it conservative? Though Shaffer often works in out-of-school programs, his goal is to put pressure on schools to prepare children to be productive workers, thoughtful members of society, and savvy citizens. To be responsible members of the public sphere in a fast-changing, high-tech, science-driven, global world by learning the ways of innovation.

Today it doesn't get more back to basics than that. It comes down to our survival.

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