

Leveling Up



From Player to Designer

Engaging and Empowering Youth through Making Video Games

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Over the past few years a growing body of research has highlighted the potential for educational video games to foster highly engaged, effective learning in the classroom. These research reports from organizations such as the Federation of American Scientists, the National Science Foundation, and the Joan Ganz Cooney Center at Sesame Workshop focus mostly on learning that can result from students *playing* well-designed educational video games.

In this article, I am going to explore the potential to foster highly engaged learning by tapping into the natural passion of students for *making* video games. Our current generation of youth flow seamlessly between being consumers and producers of media. According to

the Pew Research Center's Internet & American Life Project, more than half of all teens are currently creating, modding, and mashing up media content ranging from videos to music to blogs. As the tools for video game creation are becoming more accessible, an increasing number of the 97 percent of teens that regularly play video games now want to make video games (Lenhart and Madden 2005).

Interestingly, the process of creating a good video game requires a complex set of skills that maps closely to key competencies that students will need for productive lives and careers in the twenty-first century. To design a good game, a student needs to be a socio-technical engineer, designing a complex digital system for others to use.

Designing a digital game requires one to think analytically and holistically about games as systems, to experiment and test out theories, to solve problems, to think critically, and to effectively create and collaborate with peers and mentors. These are all skills that will be needed in a twenty-first century where virtually every job will involve navigating a complex, ever-changing, digitally networked global landscape and where many of the future jobs have yet to be invented. Physicist Stephen Hawking has called the twenty-first century the century of complexity ("Unified Theory" 2003). Designing and developing video games is certainly a very complex process—and yet many kids can't wait to jump in and start!

Video Games! Really?

I first experienced both the complexity and challenge of making games in the early 1990s when I left a career in independent film to join Activision, a leading publisher of video games. Most of my friends and colleagues thought I was out of my mind. *Video games! Really?* This was an era when video games were routinely vilified by politicians and dismissed by a great many parents and teachers as a frivolous waste of time.

And yet, as soon as I began working on a wide variety of games—strategy games like *Civilization: Call to Power*, adventure games like *Spycraft: The Great Game*, and action games like Tony Hawk’s skateboarding games, I quickly discovered that making a good game requires not only a deep understanding of technology, art, interactive design, project management, and marketing, but also the ability to work with diverse teams and skill sets, continually solve problems, iterate based on quantitative and qualitative feedback, and work within constrained budgets and schedules.

I also discovered that making a good game requires a deep understanding of the subject matter being explored in the game. For example, when we made *Civilization: Call to Power*, the team had to have a deep, systemic understanding of all the factors that impact the rise and fall of civilizations to make the game feel both realistic and engaging. No design choice or software algorithm was neutral; they all had an embedded value system or point of view, and triggered great debate among members of the team. Any visitors to the development studio during that time might find themselves pulled into a debate over the economic

impact of art and culture on the evolution of a particular civilization or the impact of slavery on a civilization’s development.

Even action-oriented games like the Tony Hawk skateboarding games required the game-design team to develop certain domain masteries—in this case, understanding the physics of skateboarding. While the physics engine used in the game wasn’t intended to map perfectly to reality (one of the key differences between a game and a simulation), the developers still had to understand the real physics to effectively model the play physics in the game.

On a more provocative front, in *Spycraft: The Great Game* we worked with the former head of the CIA William Colby and former KGB Major General Oleg Kalugin (it turns out agents have agents) to explore some of the toughest moral and ethical choices of their careers, which we then incorporated into an interactive spy thriller where the player had to make similar decisions and then explore the consequences. I learned more about real-world post-Cold War politics in those design meetings than I did in a full year of political science in college.

Helping Students Play, Design, and Share Video Games

Flash forward ten years, and I am now a founder of a new game company called E-Line Media, which partners with foundations, researchers, and government agencies to develop and distribute game-based learning platforms that tap into the natural passion of youth, connect these passions to critical 21st-century skills, and create pathways of learning from middle school to college.

I am particularly excited that our first major release is a game-based-learning platform and curriculum called *Gamestar Mechanic* <<http://gamestarmechanic.com>>. *Gamestar Mechanic* teaches youth (ages eight through fourteen) how to design video games as a form of system thinking, 21st-century skill building, and creating a powerful motivation for STEM (Science, Technology, Engineering, and Mathematics) learning. The game was originally funded by the MacArthur Foundation and is being released in partnership with the Institute of Play (one of the nonprofit organizations behind the *Quest to Learn* school in New York City). Prior to release, there were over two years of research on the game, including two PhD dissertations at NYU and the University of Wisconsin, Madison.

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The Gamestar Mechanic platform has been designed to seamlessly integrate three major components:

PLAY



An adventure quest where students learn the fundamental principles of game design by playing and fixing broken games to earn rewards called “sprites”. As players progress through the game, they learn the key principles of game design through an existing narrative where they play games in the same genres of the games they are going to make, and then fix broken games that both highlight key design principles and teach players how to use the design tools.

DESIGN



An online workshop where players use the “sprites” they earn in the quest to design their own original games. At the center of the workshop is a drag-and-drop game-building tool that enables the players to design a wide variety of original games, which can be published to the Gamestar community, as well as to a personal or school website or blog.

SHARE



A community where players publish, review, and collaborate on games (describing, defending, and reflecting on their game-design ideas and decisions). The Gamestar community website creates a critical community of practice allowing designers to get feedback from their peers. Upcoming quests will explore issues such as rights and responsibilities in a “mash-up” culture, and how to be a good digital citizen.

To guide teachers on using the curricula, the Gamestar Mechanic platform also features a comprehensive set of learning materials ranging from single-day units to full-semester electives. A key goal of the learning materials is to reduce the effort required for teachers to adopt the platform and effectively use it, regardless of their knowledge of games or game design, and to help the teachers assess and guide their students’ progress.

More Tools for Creative Gamers

Gamestar Mechanic differs from other tools in that it enables game creation by focusing on the act of game design, rather than computer programming. The Gamestar

Mechanic platform is designed to serve as a complement to tools that focus on game programming and computational thinking, as well as those that enable game creation for other platforms such as mobile devices and game consoles. Here are a few of these tools:

- **Scratch** from MIT enables both game creation and digital animation/storytelling <<http://scratch.mit.edu>>
- **Kodu** from Microsoft enables creation of games that can be played on both the PC and the X-Box <<http://research.microsoft.com/en-us/projects/kodu>>
- **Game Salad** enables creation of games on mobile devices

including iPhone and iPad <<http://gamesalad.com>>

- **GameMaker** enables creation of games for the PC and offers a newly created free curriculum called Activate funded by the AMD Foundation <www.activategames.org>
- **Flash** enables higher-end programming; game design programs like the Globaloria program use Flash <www.globaloria.org>

Other popular tools and game creation platforms include RPG Maker, LittleBigPlanet from Sony, Stagecast Creator, AgentSheets, Java, Unity, and HTML5.

School Librarians as Facilitators for Creativity

Given the complex landscape of game creation platforms, a great role for school librarians would be to become a key resource for helping kids interested in making games connect to the right tools and resources. By offering information on the different game-design and game-creation tools, game-design books, and possibly hosting game-design workshops, the school library will become a really cool, invaluable resource for children whose passion is games—especially those youth in underserved communities that may not have access to such resources at home.

School librarians can also leverage student's interest in game creation by encouraging students who have already developed a basic competency in game design to use their skills to make games about a core subject area. Making a game about a subject requires a deep, systemic understanding of the subject. For example, making a game about a Mayan civilization might be a richer, more engaging experience for a student than making a slide presentation on the topic. Other learners would benefit, too, from playing the games created by their peers. In fact, innovative education sites like BrainPOP are beginning to highlight games made by teachers and students exploring core subjects.

Competitions for Young Designers

Lastly, school librarians could point interested students toward a growing body of game design competitions for youth. Here are a few that I am actively involved in:

- **National STEM Video Game Challenge:** Inspired by President Obama's Educate to Innovate campaign—announced at the White House—to engage America's youth in STEM learning, this middle school game-design competition will have its second-year launch this fall. (AASL and ALA are outreach partners for the competition.) Check out last year's winners at www.stemchallenge.org/Default.aspx.
- **Scholastic Art and Writing Awards:** This well-known, eighty-eight-year-old art and writing award program for middle and high school students recently launched video games as a category. Previous "gold key" award winners have included Truman Capote, Andy Warhol, Robert Redford, and Sylvia Plath. Who will be the Andy Warhol or Sylvia Plath of video games? Find more information at www.artandwriting.org/news.

- **AMD/Gamestar Mechanic Social Impact Game Challenge:** Every other month AMD sponsors a challenge in the Gamestar Mechanic community to make games around various social impact themes. Learn more at <http://gamestarmechanic.com/challenges/about/II>.

Other youth game development contests include:

- **Kodu Cup Challenge:** This is a game programming challenge for nine- through seventeen-year-olds working on the Kodu platform. Learn more at <http://fuse.microsoft.com/project/kodu.aspx>.
- **Microsoft Imagine Cup:** The Imagine Cup is an international student game-design competition using Microsoft development tools. Learn more at www.imaginecup.com.

Competitions are also run by Game Maker and Game Salad.

School librarians can also support ALA's annual National Gaming Day @ your library event (always the second Saturday in November).

Designing and developing video games is certainly a very complex process—and yet many *kids can't wait to jump in and start!*

Passion for Games = Engaged Students

With over 25 percent of America's youth dropping out of school (nearly 50 percent in some urban and rural areas), it is clear that too many of our youth find school neither engaging nor relevant (America's Promise Alliance 2009). And yet, many kids who have disengaged from school are spending a great deal of time playing video games and creating/mashing-up digital media. Let's harness this passion for both playing and making games. If we can connect this passion to meaningful learning, help youth find an interest-driven pathway, and foster a community of practice and culture of mentorship, perhaps we can help make school and critical 21st-century and STEM skills more relevant and engaging to a greater percentage of students. School librarians can help lead this charge!



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has spent the last twenty-five years at the intersection

of entertainment, technology and social entrepreneurship. He is currently founder and president of E-Line Media a publisher of digital entertainment that engages, educates and empowers – with a core focus on computer/video games. Alan currently serves on the Board of Directors of FilmAid International and on the Advisory Boards of Creative Capital, Global Kids, We Are Family Foundation, Startl and the Joan Ganz Cooney Center For Educational Media and Research (Sesame Workshop). He is also on the Advisory Board and the former Chairman of the Board of Games for Change, the leading global advocate for computer and video games in the public interest.



Huffington Blog Post on Game-Based-Learning:

www.huffingtonpost.com/alan-gershenfeld/game-based-learning-education_b_843001.html

Gamestar Mechanic:

www.gamestarmechanic.com

National STEM Video Game Challenge:

www.stemchallenge.org/winners/Default.aspx



Interview with Alan on the National STEM Video Game Challenge:

<http://www.ala.org/ala/mgrps/divs/aasl/aaslpubsandjournals/knowledgequest/steminterview.cfm>

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