ON SCHOOL REFORM:

The Do-it-Yourself Game Generation

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As societies worldwide seek ways to prepare children to live and work in the 21st century, new models for youth learning are being considered that could not have been imagined a decade ago. One such model, Globaloria, uses game design to help kids learn better by becoming Do-it-Yourself (DIY) game designers. DIY is a term used to describe making something without the aid of experts or professionals.

DIY game design refers to students developing their own on-line video games, from the entire pre-production stage of a game's content and rules, through final production where they flesh out the storyline, characters, and visual environments. The games can be designed for any number of purposes: to learn a new skill, to create social change, or for pure entertainment. In the process of making their own games the kids become better learners.

When game design took off as a new popular science in the early 1990s game developers were cadres of young adult techno-geeks. Teens and children were video game consumers. They were the audience. Today, kids are increasingly becoming game producers.

Games are more popular than ever. Across the globe, people spend "3 billion hours a week playing computer and video games" (McGonigal, 2010). The wild popularity of electronic games, which outdoes "all other media put together, including movies, TV, print and the Internet" (Nunberg, 2011; Gleick, 2011) combined with research about the "cognitive benefits of game play", have opened possibilities for game-design markets to flourish and for game-design by kids to be seen as a viable learning activity.

Globaloria is a peer-based learning community where kids learn as much from each other as they do from adult mentors.

GAME-BASED LEARNING IN SCHOOLS

Since their inception in the 1980s, the use of digital games has systematically increased in schools. From the 1990s to the 2000s, schools offered off-line educational digital games as learning aids. In these early programs, kids practiced subjects with "single-player drill and practice games" (Johnson, Smith, Levine, & Haywood, 2010). Collaborative digital games followed where kids solved problems through discussion and small group work. As schools got wired to the Internet in the 2000s, game-based learning was delivered over the web, allowing for more interaction and connected learning activities. In their private lives, kids and young adults began to play massively multiplayer online (MMO) games in which gamers from all over the world

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play with or against each other in real time. This suggests that game-based learning will become increasingly more dynamic, natural, highly interactive, and kids will take more of a central role in their learning.

THE CASE FOR NEW DIGITAL LITERACIES

For some time, a persuasive case for transforming current methods and systems of K-12 education has been made by bipartisan task forces, consortia, advocacy organizations, and commissions asserting that K-12 schools are ill equipped to prepare students for the rapidly changing world of commerce and information.

According to the Partnership for 21st Century Skills, today's children will live and work in "economies driven by innovation and knowledge; in marketplaces engaged in intense competition and constant renewal; in a world of tremendous opportunities and risk; in a society facing complex business; political, scientific, technological, health and environmental challenges; and in diverse workplaces and communities that hinge on collaborative relationships and social networking." (P21, 2007)

The North Central Regional Educational Laboratory says that in order for kids to be ready for the future they should develop skills and dispositions in four categories: Digital-age Literacy, Inventive Thinking, Effective Communication, and High Productivity.

- **Digital-age literacy** includes Basic, scientific, economic, and technological literacies; visual and information literacies; and multicultural literacy and global awareness.

- **Inventive thinking** covers Adaptability and managing complexity; Self-direction; Curiosity, creativity, and risk-taking; and Higher order thinking and sound reasoning.

- **Effective communication** encompasses Teaming, collaboration, and interpersonal skills; Personal, social, and civic responsibility; and Interactive communication.

- **High productivity** comprises Prioritizing, planning and managing for results; Effective use of real-world tools; and Ability to produce relevant and high quality products. (NCREL, 2003)

Developing new literacies "rooted in Internet digital communication technologies and that are heavily dependent on socially constructed, collaborative and participatory learning activities" (Lankshear & Knobel, 2008) will be central to becoming a literate 21st century citizen. New literacies are defined as knowledge and social practices such as blogging, instant messaging, chatting, social networking, digital visual imaging, and using mobile/wireless handheld devices such as cellular phones and global positioning systems. The game-design programs reviewed for this article push the limits of new literacies by having kids become developers and designers of their own games and of their learning.

VARIOUS VIEWS ON MEDIA LITERACY AND GAME DESIGN

There are four approaches to the use or production of games in media literacy and each carries assumptions.

1 KICK THE GAME HABIT To some people technology is like Pandora's box and should be controlled to mitigate the social ills that they believe will follow (Richtel, 2010). According to this view, using new media technologies wastes time and causes people to be distracted, forgetful, and isolated. For evidence, they point to cases in which using technology enhances the negative effects of group behaviors. Some teens use social media for anti-social behaviors like cyber-bullying and flash mobbing. In a series of articles run in the NY Times on the negative effects of technology, particularly on the young, Michael Rich, Associate Professor at Harvard Medical School and Executive Director of the Center on Media and Child Health in Boston, notes' "Their brains are rewarded not for staying on task but for jumping to the next thing." In this view, kids who create their own games are not engaged in productive learning.

2 PLAY GAMES WITH PASSION!
The second approach proposed by Jane McGonigal, game designer and Director of Game Research and Development at the Institute of the Future, asserts that game playing leads to increased learning and that we should spend more time playing digital games. As kids play games and figure out how to use levels, they practice the thought processes of planning ahead and strategizing. They develop persistence, patience,

and the ability to keep calm under intense pressure, to think logically, and to solve problems systemically. This approach is not so much about kids designing games, as it is about interacting with popular commercially available games and applying play skills to improve the real world.

3 **VIRTUOUS GAMES** The third approach is supported by the work of prominent game researchers Henry Jenkins, James Paul Gee, and Kurt Squire. They see technology and games as good influences on the young. They support the making of games that teach kids the facts and skills they need to **BE** media literate. The games can be designed by adults for kids or can be created by kids for their own uses. In this point of view the quality of a game is important because good games help us learn hard and challenging skills. Gee lists 36 learning principles based on theories of human learning and suggests that virtuous games are designed with many of these characteristics built into their architecture.

4 **DO-IT-YOURSELF GAMES** The fourth approach, found in the work of MIT researchers such as Seymour Papert, Mitch Resnick, Yasmin Kafai, and Idit Harel Caperton, considers game design as a youth empowerment model. Designing the game's architecture is a way for kids to create deep understanding as well as to change the world. Students should apply their game design skills to solve the world's problems.

The Globaloria program has students make "web-games about issues they care about" and in so doing encourages them to analyze their attitudes and beliefs about the world. In one activity they use a course blog to "review games and topics of interest to the community." The World Wide Workshop Foundation in New York City, in partnership with The Rethinkers Youth Organization in New Orleans and youth in the Globaloria program, developed games with the social purposes of improving the lives of people who live in economically disadvantaged communities. In so doing, the young game designers learn to see themselves as agents of positive social change and hone their media literacy skills.

GAME DESIGNERS AS AUTHORS

The Globaloria Program (http://www.globaloria.org) is premised on the idea that social networking and game design are both positive tools to enhance student learn-

ing. Globaloria explicitly teaches kids skills through tutorials so that they can learn how to design their own games.

Globaloria is a peer-based learning community where kids learn as much from each other as they do from adult mentors. The site's open source features, like wiki spaces, harness the power of kids' collective creativity and their natural tendency to learn through social interaction. As members of the "Rethink Wiki community" the students follow guidelines for how to use the wiki to give and receive constructive feedback, share personal information, and be safe in the cybersphere. There is etiquette on how youth can modify the projects of others and give credit to other game designers in the social network.

The way the site is organized illustrates how Globaloria supports gamers as they work in the open source format. Users can track the most recent changes on a wiki page, from the last 50 to the last 500 edits. Access to track edits, which record the changes made by students, gives them the ability to see each other's thinking and creation process. Understanding is deepened because kids are learning with and from each other.

The architecture of the Globaloria site is easy for teachers and kids to use. Kids and teachers alike will appreciate using Globaloria's "how to" steps and templates to guide them through the process of designing their own games. In a typical sequence, after the student designs her game she can use the Make Your Own Design Plan template to write a Game Pitch and present her ideas to classmates. The student posts drafts of their game to a wiki page for all of the members of the Globaloria community to review and possibly edit. The wiki space is an online repository of ideas and an exhibition space for students to showcase their talent.

Globaloria also supports the school's existing curriculum, which is a valuable feature for public school administrators and teachers who are under federal accountability pressure to improve reading and math test scores. Globaloria's approach to learning with technology requires kids to read and write as they

plan their work. This feature makes Globaloria an educational resource that teachers can use to boost reading, writing, and language arts content, making it easy to include the program during the literacy block of a regular school day.

GAME DESIGNERS AS PROGRAMMERS

Globaloria uses existing commercially available programs such as Adobe Flash and Action Script (a programming language for Flash). Some other approaches teach students to use programming language to create their own games. Students, to create their own games, stories, art, and music, use Scratch, a simplified programming language developed by the Lifelong Kindergarten Group at the MIT Media Lab.

Scratch is often used in out-of-school programs like the Computer Clubhouse Network (http://www.computerclubhouse.org/), which operate afterschool and on weekends in over 100 under-served communities worldwide. Based on the success of the Computer Clubhouses, out-of-school computer game design clubs are springing up all over the United States. An example is the Game Maker Academy in Chicago that "teaches students how to make their own video games, simulations, animations, and digital stories" (http://www.gamemakeracademy.org/).

Students practice computational and mathematical reasoning by using the Scratch programming language to make their characters move and make sounds. In the creative process of writing the game's action and scripts, kids learn to reason systematically. To add variety, kids can use stock characters and sounds or they can draw their own images and record their own voices. The Scratch website, http://scratch.mit.edu, like Globaloria, allows the

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young programmers to post their projects to the web so that the on-line community of Scratch users can view and learn from each other's creations.

GAME DESIGNERS AS MEDIA ANALYSTS

Media literacy encourages young game designers to analyze media including the games they produce. As students design their own games they must be reminded that these are not neutral creations. A principle of media literacy is that all media express a point of view. Students must ask themselves, "What point of view does my game represent? Do I have an agenda of which I may not be aware? Who is my audience? Who is excluded from my audience? Does my game raise any issue or problem which I should consider?"

Students as game players and game designers demonstrate a dramatic rethinking of the role kids can have in their own learning. When students become authors of their own games they are empowered as learners and as thinkers. Game design by kids has the potential to reshape K-12 education. •

REFERENCES

Caperton, I. H. & Gee, J. P. (2010). Toward a theory of game-media literacy: Playing and building as reading and writing. *International Journal of Gaming and Computer-mediated Simulations*, 2(1), 1-16.

Gee, J. P. (2003). *What video games have to teach us about learning and literacy.* New York, NY: Palgrave/Macmillan.

Gleick, J. (2011). *The information: A history, a theory, a flood.* New York, NY: Pantheon Books.

Jenkins, H. (2009). *Confronting the challenges of participatory culture: Media education for the 21st century.* Boston, MA: MIT Press.

Johnson, L., Smith, R., Levine, A., and Haywood, K., (2010). 2010 Horizon Report: K-12 Edition. Austin, Texas: The New Media Consortium.

Kafai, Y. B., Peppler, K. A. & Chapman, R. N. (2009). *The computer clubhouse: Constructionism and creativity in youth communities.* New York: Teachers College Press.

Lankshear, C. & Knobel, M. (2008). *New literacies: Everyday practices and classroom learning.* Buckingham, UK: Open University Press.

McGonigal, J. (2011). *Reality is broken: Why games make us better and how they can change the world.* New York, NY: Penguin Group.

Papert, S. (1993). *The children's machine: Rethinking school in the age of the computer.* New York: Basic Books.

Richtel, M. (2010). Growing up digital, wired for distraction. Retrieved February 26, 2011, *from* http://www.nytimes.com/2010/11/21/technology/21brain.html?_r=1&ref=yourbrainoncomputers

North Central Regional Educational Laboratory. (2003). *21st century skills.* Learning Point Associates.