“Ask: ’What is it I need my students to learn that the technology could help facilitate?’”

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Let’s Get Engaged

Carl A. Harvey II, 2011–12 AASL President

As I sit in my home office today contemplating what to write in my first column in Knowledge Quest as your AASL president, I am so humbled by the opportunity to serve the school library community over the next year. This year is full of potential. Even in these difficult times for education and school libraries, we have to continue to look forward to the future. How can we best position ourselves to be ready to face our challenges and demonstrate the impact of school libraries on student success? How do we get that message about the importance of effective school library programs—led by certified/licensed school librarians—across to those who will make the decisions about staffing and programming? Some pretty hefty questions, but I think we’re already on the right path.

AASL in the last four years has produced amazing resources at an even more amazing speed. Standards for the 21st-Century Learner, Standards for the 21st-Century Learner in Action, and Empowering Learners: Guidelines for School Library Programs have set the foundation of what is possible and where our library programs should be going. These resources help to push us farther down the path as we design library programs that prepare students for the twenty-first century.

One of the most important roles AASL plays is providing tools and resources that building-level school librarians can use to improve their programs. AASL’s Learning4Life Task Force has been hard at work promoting these new tools to school librarians and other stakeholders. The L4L group has done an amazing job, too, but some of the most difficult work has to be done at the building level. The building-level school librarian has to be engaged in leading the school in creating a vision for the school library, and then working with administrators and teachers to implement that vision.

One of the things most AASL presidents do is come up with a theme: something that ties together their twelve months in office and serves as a focus for the year. When I was running for election, I used the word “involved” a lot. But, as I continued to ponder all of what AASL has been doing and where we need to go, that word “engaged” keeps popping back up in my mind. Not only do we need to be involved, but we need to go deeper and be actively engaged! As that word rolls around in my

The building-level school librarian has to be engaged in leading the school in creating a vision for the school library, and then working with administrators and teachers to implement that vision.
I guarantee that every experience I’ve had with AASL has made me a better school librarian for my students and staff. Whenever I think about the monetary cost of what I’ve paid over the years in AASL dues, I realize that I can honestly say I’ve gained so much that the benefits far exceed the dollars I’ve spent.

Engaged in Our Schools
We all know our building administrator is the leader of the school, but I suspect we also know teachers who are also leaders in the building. They are easy to recognize because they have the respect of their peers; they have influence over the decisions made; and they do amazing things with kids. A school librarian has to be one of those teacher-leaders in the building. School librarians have to be seen as leading the charge for literacy, 21st-century skills, technology to support learning, etc. While leading the charge, school librarians can constantly demonstrate how effective school library programs bring positive changes in their schools.

Engaged in the Profession
Obviously this one is dear to my heart—probably the most rewarding professional experience in my life has been my involvement with AASL. I have met so many wonderful school librarians from all over the country. They are my network when I need ideas, need comfort from a hard day, or need to celebrate a great success. I’ve met many of these people by working on AASL committees, the Affiliate Assembly, and the Board of Directors.

We have so many great ways to participate—writing an article for Knowledge Quest, presenting a session at a conference, being a member of a committee, running for an AASL board position, posting on the AASL blog, etc. The possibilities are endless.

This spring I had the pleasure of appointing members to the various AASL committees. I can tell you the database was full of great volunteers, and I tried as hard as I could to appoint as many people as I could. (Never fear—I’m told this process of appointments doesn’t really ever end until you are finished being president. So, if you weren’t called on yet—you still may be!) As the year develops, we will have task forces, working groups, and in no time at all AASL President-Elect Susan Ballard will be starting to appoint, too. So, don’t hesitate to go to the volunteer database today and sign up at <www.ala.org/aasl/volunteer>.

One of the great things AASL has been working on is virtual participation on committees. The requirement to attend Midwinter Meeting and Annual Conference to meet face to face has disappeared for almost all of our committees. Certainly we hope to see many of our members at the conference, but we also realize that we need to involve members who can’t travel. We’re still figuring out some of the logistics, but this change is certainly moving us forward.

I guarantee that every experience I’ve had with AASL has made me a better school librarian for my students and staff. Whenever I think about the monetary cost of what I’ve paid over the years in AASL dues, I realize that I can honestly say I’ve gained so much that the benefits far exceed the dollars I’ve spent.

So, for my presidential year I’m focused on being engaged! I hope you will consider ways you can be engaged in your school, community, and the profession. Take some risks and really focus on building the absolutely best school library program you can for your students!
Engage Our Students

I think the word “engaged” is a perfect segue into this first issue of Knowledge Quest, which is focused on gaming. We all want our school libraries to be places where kids want to come. We want to create an environment where they feel safe, secure, and confident that they can get the help they need. We want to foster an environment where they can learn and create and grow! We know that learners all have different styles and strategies that work best for their learning. We know that playing games is one of those strategies that could work really well, not only for motivation and engagement, but also for teaching and learning.

The school librarian has an opportunity to be a leader in this area. Not only can we help to provide resources for learning through games, but we can also encourage their use and encourage teachers to share ideas for using games successfully. We can help provide kids with opportunities to use these games not only to learn teamwork, but also to absorb academic content. Our kids today play a lot of games—whether on a computer or a mobile device of some sort. We have to take advantage of our students’ love of games so we can harness it and make them love to learn, too!

So as you browse the pages ahead of you, start taking mental notes of what might work in your library. Learn from these engaged authors who took the time to share their thoughts and experiences. When I read Knowledge Quest I always come away with an idea that I can go back to school and use immediately, and I’m sure you do, too.

I want to thank you again for your vote of confidence in me to lead this organization for the next year. I’m so excited about the possibilities and adventures ahead! We’re all going to be engaged in our schools, in our community, and in our profession! And together we’re going to make this year the best yet!

Carl A. Harvey II is the school librarian at North Elementary School in Noblesville, Indiana, and president of the American Association of School Librarians.

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Source code 15M
Starting a game club at your school doesn’t take a lot of money and doesn’t take any special knowledge. It does take a little patience, a love of games, and a willingness to play to make the experience fun.

It’s All Fun and Games in the Library

Terri Kirk, terri.kirk@mccracken.kyschools.us
and
Christopher Harris, infomancy@gmail.com

TERRI—I’ve always loved games. For as long as I can remember, board games, card games, guessing games, and trivia have been a part of my life. On long trips from Michigan to Kentucky my family played I-Spy, the license plate game, and card games. Monopoly, Scrabble, and Chinese checkers kept us busy on snowy Michigan days. So when a student asked me to start a game club at my school, I jumped at the chance.

It was easy to get started. We collected $3.00 dues, and I went to Big Lots and Walmart and got as many board games as I could. I asked the faculty to donate games their families no longer played. The Game Club was put on the monthly club rotation and forty to fifty students attend each month. Some of the favorite games are Jenga, Uno, Clue, Twister, chess, checkers, and Monopoly. The club period lasts about thirty minutes so many games are not actually finished during the time. Winning, I’ve realized as I reflected for this column, is not the “big deal” for most students that it is for me. I am a terrible winner—I whoop and cheer and have even been known to do “the Winner’s Boogie dance” after a particularly close game. I am a better loser because I have the attitude that I’ll get the win the next time. It pleases me that the students in Game Club like to play games for the fun of it.

Some people think that Game Club is not a learning club. I have to disagree. As I said, students have learned that playing is almost as much fun as winning. They learn to share, be nice, take turns, and pick up after themselves. Sure, teenagers should already know this, and most of them do. The nice thing about Game Club is that, for those thirty minutes each month, it is cool to be a kid again. The only rule we have is that everyone has to play. Occasionally, I’ll bring my Guitar Hero or Wii. I do this a few times a year and set it up so that students coming down the hall can see the game. This is the advertisement we use for Cybernight.

Once or twice each year, Game Club sponsors Cybernight. The officers of Game Club turn the library into a game paradise. The tables and chairs are moved out, and game consoles are moved in. Projectors and whiteboards are brought in. Each member can come for free, and we all chip in for pizza. Nonmembers can buy a ticket for $5.00, and we play for ten hours! (We start about noon, and we leave at 10:00 p.m.)

At Cybernight, we play video games. I am a Guitar Hero fan and will play for hours. Students love
it and are truly shocked to see me rocking out on the game. During this time, I do allow some war games that (mostly) boys like. It is a great day. The kids set it all up and clean it all up. They really appreciate my willingness to host this event in the school library and end up seeing the school library in a whole new way. It isn’t just the place to get great books, but it is also a place to relax and have fun.

Starting a game club at your school doesn’t take a lot of money and doesn’t take any special knowledge. It does take a little patience, a love of games, and a willingness to play to make the experience fun. I could talk about the educational value of play, but to me the most important part of a game program is just the play.

**CHRIS**—I will talk about the educational value of games. For the School Library System of the Genesee Valley Educational Partnership, the creation of a game library was an amazing educational breakthrough (see <http://sls.gvboes.org/gaming>).

The modern board games in our collection are fully aligned to both the AASL Standards for the 21st-Century Learner and our state curriculum standards. By using real games that bring real fun to classroom instruction, we have shown the value of play as an integral part of learning. Now principals and superintendents call our office to ask why their teachers and school librarians aren’t using games.

The reasons for the popularity and educational value of playing games are simple. Play is an instinctual form of learning—for a clear demonstration of this instinctive educational play, just watch kittens learning to hunt and pounce using their mother’s tail. And we are no different; there is a good reason why armies hold war games, for example.

Recently, this value of playful learning has regained attention thanks to the creation of “gamification” as a new way to describe what school and public librarians have been doing with summer reading programs for years. Thanks to its buzzword status in businesses, many new cases of gamification are sloppy attempts to hide meaningless and repetitive tasks behind a shiny veneer of points, badges, and levels. Like so-called educational games in which students flick a spinner and complete the worksheet that the pointer lands on, gamified tasks are not real fun.

As Terri notes, the real value of games are the episodes of authentic play that unite groups and build communities—and school librarians can easily encourage that play. And if, while engaging in authentic play, students also happen to be using 21st-century learning skills like inquiry, evaluation, and synthesis, that isn’t a bad thing.

**Terri Kirk** is a school librarian at Reidland High School in Kentucky and has been a gamer since age 6! She is currently serving as ALA Chapter Councilor for Kentucky, as well as Game Club sponsor at Reidland. Terri served as school librarian for 20 years in McCracken County, and is currently Past President of the Kentucky Library Association and the Kentucky School Media Association. She is also a past member of ALA Executive Board.

**Christopher Harris**, author of the Infomancy blog <http://schoolof.info/infomancy>, is the coordinator of the School Library System for the Genesee Valley Educational Partnership, an educational services agency supporting the libraries of twenty-two small, rural districts in western New York. In addition to his writing on Infomancy, he is a regular technology columnist for School Library Journal talking about “The Next Big Thing.”
Getting Teachers on “Board”

Everybody loves board games. We all probably grew up playing Monopoly, Sorry!, Clue, and Game of Life. Board games can provide students with opportunities to apply concepts they have learned. By using games that support the curriculum, we can give students opportunities to experience play, while at the same time promoting student achievement.

Authentic designer board games are much different than your basic board games that have few rules and a very small learning curve—think Risk, not Sorry! As Jenny Levine explains in her article “The Games People Play,” these games rely on strategic moves for the outcome, not just a dice roll (2008). And these are not “educational” games, but authentic board games played for fun and chosen for their connection to the curriculum. But board games in school libraries? Aren’t we supposed to be helping students research? This is a question that Amy Jackson, the school librarian at Homewood Middle School, and I asked in the spring of 2009. Our answer: We could do both.

Research supports the use of games in public, academic, and school libraries as a way to engage patrons and students, and to help develop important skills. “Libraries are learning centers that provide a variety of instructional, informational, and entertaining resources for schools; it is only natural that libraries provide games” (Mayer n.d., 1). Games and play are also a natural part of our lives. Play is an important part of our mental and social development. More importantly, as stated on ALA’s wiki, Games and Gaming Resources, “school and academic libraries have a mission to [support the curriculum]. Games provide stories and information, presented in a new format. [They] encourage critical thinking and problem solving and accomplish objectives of curriculum frameworks and meet [AASL Standards for the 21st Century Learner].” The connection to the AASL standards interested us. Board games promote collaboration, inquiry, and critical thinking. Not
only would we be able to offer a new type of experience for our learners, but we could also communicate our standards to the teachers and help make the AASL standards an integral part of the learning process.

The Grant

We decided to write a grant proposal for the Homewood City Schools Foundation’s Action Team Projects. Our foundation funds new and innovative collaborative projects that focus on student growth and achievement. We believed that board games would be the best focus for this grant and would give us an opportunity to work with teachers on changing their mindset about using games in the classroom. The grant provided money for professional development and for purchasing board games for the middle and high school.

We then began researching which games would give us the biggest return on our investment. Using the lists available in Brian Mayer and Christopher Harris’s book, Libraries Get Game: Aligned Learning through Modern Board Games, as a starting point, we began purchasing test copies of each game we were considering for our schools. The game library website from the School Library System of Genesee Valley Educational Partnership was very valuable as we chose games that had already been tried and used successfully by other schools. This valuable website also lists each game by level with the New York State and AASL standards it supports.

To purchase the games we used an easy-to-work-with game vendor. They have an extensive website, fast shipping, and take purchase orders.

We tried to make sure that all subject areas were covered, and that these were games that could be played or adapted to be played in a fifty-minute class period. Both our libraries are open-concept, so the best thing we could do to start was allow the students to play the games in our school libraries. One student group began playing Settlers of Catan at the high school during their study period. Teachers began to see the games and ask questions. When I had a chance to present games to teachers in their department meetings and explain how the games could be used, I began to get more questions and requests.

Annalisa Crews
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Success at the High School

Melanie McBrayer’s AP environmental science classes were the first classes in the high school to use a board game as an instructional tool. We played Power Grid, the goal of which is to purchase power plants; resources such as coal, oil, or uranium; and then cities to power. The player who powers the most cities by the end of the game is the winner. Not only are players learning concepts like the amount of pollution certain types of power plants emit, but they are also learning economic concepts of resource and money management. McBrayer explained, “...this multi-faceted game format provided a hands-on and challenging approach to managing the complexities of a power utility. Students have to balance their finances for purchasing different types of power plants and available energy sources for their power plant while trying to build into a grid system. There are multiple ways to incorporate several curriculum concepts into this game: nonrenewable vs. renewable pros/cons, pollution-control regulations, regional air pollution issues such as acid precipitation, photochemical and industrial smog” (2011).

This game has a large learning curve. I took the game home to play with some friends first to troubleshoot what the challenges might be. Power Grid takes at least two hours to play. The game is played in rounds, with each round played in five phases. The rounds make up three steps. I quickly realized we would never get through the first step, so for use in the classroom I adjusted the rules accordingly. We used two full class periods for the game. One period was used to teach the game and play a practice round. On the second day, students came into the library ready to play. Each player was able to have his or her own role, further developing a sense of ownership in the game. These roles include banker, auctioneer, resource manager, and city manager. Students were able to understand the benefits, but also the drawbacks, of powering a plant with coal. The low cost of the resource is a benefit, but it is nonrenewable. Once you run out, there is no more, which drives up the price. Also, some power plants use wind power, which players do not have to purchase, but these plants are the more expensive plants to purchase. We have also discussed developing extra rules to help teach the curriculum, including building certain types of plants in certain regions of the country, as well as instituting trade caps, and environmental policy that would reward the greener plants and punish those that produce more pollution. The possibilities are endless.

You can use authentic board games to assist in teaching curricular concepts, but the point is to allow students to have fun while they are playing and learning.

Success at the Middle School

Ellen Maple, a special education teacher at Homewood Middle School, decided to try a math game with her math support class. This class focuses on strengthening basic math skills for seventh- and eighth-grade students. Her students were working on addition and subtraction concepts so she decided to try the card game 7Ate9. The object of 7Ate9 is to be the first person to play all of your cards. Players race to play cards by looking at the top card in the center pile. The players must add or subtract to match their cards to the top card. This game is intended for players ages eight to adult; players in the math support class took about fifteen minutes to catch on to the object of the game. Ellen Maple and Amy Jackson played the game with the students, and assisted them with their addition and subtraction until they understood how to play successfully. Because in 7Ate9 players race each other, the students enjoyed competing while performing mathematics problems. This game served as remediation for these students, but they did not feel like they were working math problems. They were having fun playing a card game. Jackson stated, “7Ate9 is a wonderful game to play with any age student who needs to hone their addition and subtraction skills. This game held the attention of our middle-grade students because it is fast-paced and competitive” (2011).

Other Uses

Board games have also successfully been used in other curriculum areas. Our drama class has used the role-playing game Werewolves of Millers Hollow to practice their improv skills. The Advanced Placement Language and composition class has used Apple to Apples to help review for the AP exam by creating cards that covered the literary terms students needed to know. The psychology classes have used board games to study the effects of games on the brain. The middle school geography classes integrated 10 Days in Europe and 10 Days in the Americas into their review of countries. I have recently purchased the game Acquire to be used with the economics classes.
In Acquire, players acquire hotel properties, and buy and trade stocks to try to make the most money.

Goals for Further Development

One goal Amy Jackson and I have for future development of our collection is to create more teacher ownership. When we began this project we made the first purchase decisions and then presented the product to the teachers. If teachers begin integrating the games into their lesson plans, then we can be assured that the games are being aligned with the curriculum. Also, by communicating with teachers about their curriculum needs, we can better purchase games that will assist with difficult concepts while allowing students to learn other valuable skills.

Suggestions for Starting Your Own Board Game Collection

Start small. Purchase one copy to test before you purchase enough for a class set. Teacher ownership may be improved if teachers can assist in evaluating the appropriateness and the connectedness of specific games.

Start with an ally. Choose a teacher with whom you already have a good relationship and present her with some options. Find out what her curriculum needs are and then research some games that may work. For example, if you hear that a certain teacher struggles with specific concepts, then suggest a board game that may help reinforce those concepts.

Play visibly. If possible, play the games in a common space, where many people can see what you are doing. I have had more teachers ask me about the games because we played in the open school library instead of the classroom.

Make copies of the rules. We have made extra copies of all the rules and stored them in a master file in case rule sheets get lost. Also, make enough copies for each student to have them. This is especially helpful at the elementary and middle school levels. This way, all students can refer to the rules throughout the game.

Be flexible. Create your own rules that help support the curriculum. Remember, the focus is student learning, not following every single rule to the letter. Also, you will lose game pieces! I know librarians can be very organized, and losing game pieces could be traumatic, but remember, for most games you can order extra pieces from the manufacturer, or you can create your own pieces with wood, erasers, paper clips—whatever works.

Don’t be afraid to fail. You may purchase a game that is not effective once you actually try it. Don’t worry. You can still add it to your collection. It may work for another teacher at another time, or the students may pick it up and play it on their own.

Advertise. Make sure your teachers know what games you have and how those games can align with their curricula. Promote the AASL standards that will fit with each game, printing out and taping the standards to the game box. Make sure teachers are aware that the goal is curriculum support, not a reward system. This will help solidify your role as an instructional partner.

Have fun. You can use authentic board games to assist in teaching curricular concepts, but the point is to allow students to have fun while they are playing and learning. Don’t let the experience be frustrating. In the end, the focus is student achievement, so as long as you are doing that, your effort—and the students’—will be a success!

Join Annalisa on October 11 at 7:00 PM CST for a webinar based on this Knowledge Quest article! Visit www.al.org/aasl/knowledgequest for registration information.

Annalisa Crews
is a school librarian at Homewood High School in Homewood, Alabama. She is a Nationally Board Certified Teacher and member of AASL’s Intellectual Freedom Committee.

Works Cited:


ARE GIRLS GAME?

HOW SCHOOL LIBRARIES CAN PROVIDE GENDER EQUITY IN E-GAMING

Lesley S. J. Farmer lfarmer@csulb.edu // LOADING...
Gaming has come to the library. School librarians are increasingly incorporating gaming into their program of resources and services. Besides addressing the natural interest that youth have in games, school librarians recognize the educational benefits of games, particularly in terms of information and digital literacies. While board games have been around for centuries, e-gaming (that is, playing video, console, and computer games) is a relatively new phenomenon. And, unlike board games that have interested both sexes, e-games seem to engage boys more than girls. How can school librarians address this apparent inequity and provide positive e-gaming experiences for all students?

The Youthful World of E-Gaming

E-games have come a long way from the early days of Pong. In 2010 the U.S. video game industry, encompassing almost nine thousand companies, posted $40.7 billion in revenues and $2.3 billion in profits. Two-thirds of the market segment consisted of games and software; another quarter consisted of consoles and accessories, and online subscriptions accounted for the rest (Thormahlen 2011). Two-thirds of U.S. homes own either a console or PC used to run e-games, and almost half of household heads play e-games on cell phones or PDAs (Entertainment Software Association 2011).

Even a decade ago, nearly all children played e-games or knew someone who did. By 2008, 97 percent of teens played video games, with three-quarters playing weekly, and a third playing daily; most played socially, with only a quarter usually playing alone (Kahne, Middaugh, and Evans 2008).

Gender Differences in E-Gaming

The face of e-gamers has changed recently. It is no longer a male domain; females now comprise forty percent of the e-gaming population, largely due to Nintendo’s Wii and cell-phone casual e-games (Thormahlen 2011). Nevertheless, male youth tend to play e-games more frequently and for a longer time than do girls; the difference being most glaring between younger boys and older girls—the latter accounting for only 4 percent of the total video-game audience (Nielsen 2007).

More importantly, gaming practices differ along gender lines during teenage years. As girls enter puberty, their e-gaming activity drops significantly, largely because of continuing gendered perceptions about e-gaming. As teens explore their sexual identity, they are more sensitive to sexual stereotypes, and girls tend to distance themselves from the mechanical and violent nature of some e-games (Agosto 2004). Girls also have difficulty identifying themselves with the characters, which tend to be male or non-human; moreover, the default female characters represent stereotypical sexualized images (Graner Ray 2004). In addition, girls are more likely to give up on a complicated game than are boys, and if girls have negative first experiences, they are less likely to become long-term gamers (Forssell 2008). Even seasoned girl gamers do not fit a simple boy-girl dichotomy because they tend to particularize their gaming behavior. Nonetheless, gendered differences fade with experience and age (Beavis and Charles 2007). These gendered differences can impact girls’ futures. For instance, girls may generalize their negative e-gaming experiences, and avoid technology courses in college or as part of professional development.

As more courses incorporate e-gaming activities, girls may find themselves disadvantaged in such learning environments. Furthermore, since 85 percent of jobs now involve technology, girls who shy away from technology because of e-gaming failure may self-limit their professional options. Their avoidance of technology results in lost contributions to society.

Why E-Games?

E-gaming can be so engaging that it can detract from academics, but it can also foster 21st-century skills of information literacy, problem solving, communication, and collaboration. In terms of learning theory, e-gaming is usually associated with activity theory, which relates a subject and an object with mediational means; tools also mediate between the player and the larger culture. The characteristics of activity–theory–based gaming inform teaching and learning in several ways, according to Brian Myers: use of fixed, equitable structure and
rules; clear goals within a rich context that provide meaning and relevance; opportunities to explore identities; cognitive and affective engagement; specific and timely feedback; and sense of control and personal investment (2008). These elements all resonate with girls, so the key to success for learning through e-games is gender-sensitive implementation.

E-games per se will not guarantee effective learning. Like other learning activities, they need to address academic content and concepts, and build skills and knowledge as players evaluate circumstances and solve problems successfully within the time frame available. Additionally, intentional instructional design to incorporate e-gaming is required; merely assigning an e-game without context and rationale will turn off girls in particular. On the other hand, when incorporated thoughtfully, e-games can introduce technology through motivating activities, improve problem-solving and collaboration skills, enhance spatial skills, and increase self-efficacy, all of which especially benefit girls (Brosnan 1998, Cooper and Weaver 2003). In short, when e-games are introduced in gender-inclusive ways, all students can succeed academically and psychologically.

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E-Games in School Libraries
As school library programs support the academic and personal needs of students, these programs are trying to reach out to their population more proactively, meeting them on youth’s territory. In terms of e-gaming, that can include gaming books, physical access and online links to educationally appropriate e-games, and incorporation of e-gaming in instruction. In the process, school librarians should consider the interests of girls in their game selection so that both sexes can enjoy e-gaming experiences.

Lesley S. J. Farmer has worked as a school librarian for twenty-five years and currently coordinates the Librarianship Program at California State University, Long Beach. She teaches reference, technology, collection development, management, cataloging, and literature courses, and has authored several books. Her forthcoming book is Instructional Design for Librarians and Information Professionals (Neal-Schuman 2011).

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WHAT'S YOUR GAME PLAN?

Jennifer A. Siderius
jasiderius@gmail.com
Developing Library Games Can Help Students Master Information Skills

GauchO. One short word, forever seared in my memory at the age of nine. Just hearing the word transports me back to my elementary school library, where my classmates and I could feel the curiosity and excitement as we raced to the encyclopedias in hot pursuit of the right term for an "Argentine cowboy." Due to our anticipation to conquer the next question, we never realized that our game was anything but just fun. However, our school librarian was able to teach us library skills in an engaging manner through the implementation of that game. Though my elementary school days have long since passed, learning through games and play is still a part of many educational settings.

Stepping into a school library today reveals the dramatic changes in educational games since my elementary school days. Would my former classmates recognize the school libraries of today? Many current school libraries now boast computer- and video-based games, as well as geocaching, big games, or large-scale scavenger hunts that pit teams against each other in timed races to find clues about a predetermined topic, and video-game-night programs. Though the focus on gaming in educational settings now centers on technology formats, room still exists for library-skills games that require movement, interaction among peers, and use of library resources. "Gaming does not necessarily have to involve technology and can be integrated into many of the library's existing programs and services. We must pay attention to 'play' as a way to deliver services since stories exist in more than one modality" (Ward-Crixell 2007, 36). Even non-technological games engage students by allowing them to explore topics in a safe setting. "Anyone who has worked in an educational setting knows
that presenting an opportunity to play will catch the interest of any student. Play is a natural way for children to learn about their environment. Being intrinsically motivated to play, students are eager to practice new skills. Games provide a place for trial and error play” (Adcock 2008, 56).

Why Games?

Active learning during games offers other benefits for students, in addition to benefits for school librarians. First, active learning through playing games allows the school librarian to deliver differentiated instruction. The nature of games enables students to use different learning styles, such as kinesthetic or auditory modes, to be successful in demonstrating mastery of information or library skills. “This generation has an affinity for visual over textual information. Instructors must focus on learning style preferences to maximize instruction. It is no longer adequate to provide ‘for-their-own-good’ instruction. Evolving teaching methods accommodate these changing learning styles and lead to improved student attitudes and performance” (Smith 2007).

Second, learning through games promotes student inquiry. “But what games are really good at doing is amplifying kids’ interests in a topic and then making them ask questions or be curious about something. It may not be something that schools are ready to accommodate, but in the library you can follow your own interests, make new social networks, have new forms of peer relationships” (Harris 2010, 39). Games allow students to identify their information needs while equipping them with the skills necessary for answering those queries.

Third, games allow school librarians to formatively assess students. Games may be implemented at the beginning of a unit of study so that the school librarian can determine strengths and identify possible gaps in learning library skills. The results will help the school librarian plan a unit that teaches skills to close the gaps while reinforcing the strengths. Games may also be implemented at the end of a unit to determine students’ retention and application of library skills. Then, the school librarian will know what needs to be reviewed before moving forward in scaffolded instruction.

How Do You Create A Game?

So, how does one go about designing a library-skills game to engage students? From my professional experience as an elementary school librarian, I have found the following steps to be useful.

Determine your end goal. What are you assessing or hoping to accomplish with the library-skill game? Is this game to be used as a pre- or post-assessment? Would it be better for assessment to have students work as individuals or as
teams throughout the game? “But most of the time, a well-designed game requires students to use the inquiry, critical thinking, and information-processing skills that are highlighted in AASL’s standards” (Harris 2009, 26).

**Know your students.** Think about the students that you are assessing. What are their learning styles? What are their personalities? What type of game would be best suited to their needs? Do they need a complex game or something short?

**Establish your time frame.** How long is your instructional period? How long will it take to set up and implement the game? “School schedules are insane, and class periods are short. So most games need to be set up, learned, and played in about 40 minutes” (Harris 2009, 26).

**Decide the format of the game and rules for play.** Do not feel as if you have to reinvent the wheel! Take a look at standard games with which students are already familiar. Adapting a familiar game will reduce the learning curve for rules and how to play the game, and then learners will have to concentrate only on implementing the library skills. So, take a look at basketball, football, board games, and other common themes to see how you can tweak them to fit your needs. “If you want students to get into them, it’s critical that you provide real games—and not some worksheets with dice masquerading as ‘educational games.’ If there’s any doubt about a game’s authenticity, just ask yourself if it’s something you’d want to take home to play for fun” (Harris 2009, 26).

**Write the game questions or tasks.** Is this game for recall or application of information? Let that determination drive what types of questions or tasks you develop. Write questions that cover the information you want to assess. Alternatively, let students develop review questions for you. By creating a question or task that requires application of information, learners will be required to master the skill.

**Prepare a chart for assessment.** Use your favorite word-processing software to create a method for assessing students and saving the notes. The chart should include an area for student names and game objectives or topics of assessment. If you are assessing students’ recall, use a simple table with areas for checking off mastery of information (see figure 1). If assessing students’ synthesis of information, leave an area under each student’s name to take notes as anecdotal records.

**Play game with students and review.** Look for ways to improve the game in the future. Note which questions or game procedures students struggle with. Then, ask for their input to continue modifying the game for future use. Lastly, do not be afraid to let go of an idea that does not work out.
If you are limited on planning time, you can still develop review games for your students. Remember, you can always start with another game and adapt it to fit your unit of study or student needs. Here are some game adaptations to get you started!

**Book Bowling**
This is a twist on a classic game! Purchase a plastic bowling ball set or borrow one from the physical education teacher. In the school library, use masking tape to mark the location for pin setup and a spot for the bowler to stand. Divide the students into three or four teams. Play rotates between the groups. When it is a team’s turn, they will send a teammate up to bowl. For every pin that the bowler knocks over, his or her team will be asked a question that relates to the current unit, library skills, or literature. For example, a student who knocks over five pins will earn five questions for his or her team. The teacher reads the questions aloud to the team and any team member may answer the question with or without waiting for the entire question to be read. The team gets one point for each question answered correctly. At the end of their questions, move to the second team. Play continues in rounds in this manner until a predetermined point goal has been reached or the time limit is complete.

**Stump the School Librarian**
Explain to students that it is their turn to assess you to see how well you know the library! Give each student an index card. On the index card, each student writes his or her name, one question about the library or unit of study, and the answer. Each student stands to ask you his or her question. If you answer correctly, you get a point but if not, the students get the point. Play as time allows. At the end of class, collect the index cards for review. Check to see if students have correctly answered their own questions.

**Hot Potato**
A fast game, hot potato can be implemented at the end of a class for a quick assessment or review of skills. Before class, generate a list of review questions and have a CD player, iPod, or computer cued to fast-paced music that the students enjoy. For the game, have students stand in a circle and give one student a book to hold. Once the music starts, the students pass the book around the circle clockwise until the music stops. The person holding the book when the music stops answers the review question. The music then begins playing again, and the game resumes as before. This game may also be lengthened to ensure that each student has an opportunity to answer a review question. I have used this game for reviewing the Caldecott and Newbery Medals after a unit on award-winning books. I substituted a medal for the book, and students took turns recalling facts about the medals, in addition to naming past and current winners.

**Bloom and Grow with Call Numbers**
Before class, write authors’ last names, as students would find them in the fiction section, on die-cut flower shapes (e.g. FIG LOB or F ROW). In class, read *Alison’s Zinnia* by Anita Lobel. Discuss with students how the book is arranged in alphabetical order by names, much like the fiction section of the library. Review how books in the fiction section are arranged in alphabetical order by the author’s last name. Use a dry-erase board...
The nature of games enables students to use different learning styles, such as kinesthetic or auditory modes, to be successful in demonstrating mastery of information or library skills.

Sensational Shamrocks

Help students find the treasure in library books with this seasonal game! Before class, cut shamrock shapes out of green paper and hide them in specific books throughout the library. Keep a list of which books they are hidden in and the call numbers for those books. In class, review with students how to use call numbers to locate materials in the school library. Divide students into pairs. Give each pair a call number, and explain that they are to locate that book and bring you the shamrock hidden inside. They must put the books back in the correct place. As students locate the shamrocks, cross them off your list. The pair to collect the most shamrocks wins the game and can draw a prize from your "pot of gold."

Treasure Hunt Game

Student tasks:

1. Locate a book using a search method (by title, author, or subject) in the catalog.
2. Locate the call number or shelf identifier for the book.
3. Go to shelves and locate book.

Table 1: Sample form for recording students' recall of information.

<table>
<thead>
<tr>
<th>Students</th>
<th>Objective 1 – Identify the Caldecott Medal Award</th>
<th>Objective 2 – Identify a part Caldecott winner</th>
<th>Objective 3 – Identify this year's Caldecott winner</th>
</tr>
</thead>
<tbody>
<tr>
<td>Student 1</td>
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<td></td>
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<tr>
<td>Student 2</td>
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<td>Student 3</td>
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<td>Student 5</td>
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<td>Student 7</td>
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<td>Student 8</td>
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<td>Student 9</td>
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<tr>
<td>Student 10</td>
<td></td>
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</tbody>
</table>

Jennifer A. Siderius is media specialist for New Market Elementary School and author of Liven Up Your Library: Creative & Inexpensive Programming Ideas (Upstart Books 2009).

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Implementing and Gaming in School

Khalida Mashriqi
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How do technology and gaming fit in with a school library? Don’t librarians just read books to students and help them find information in a card catalog?

Unfortunately, this is the assumption many people incorrectly make about the school librarian’s job. The reality, however, is that school librarians play numerous roles throughout a day. We are information specialists who keep up with the constant changes in information and technology.

As a fourth-year public school librarian it took me awhile to figure out the right way to implement technology in the library. Fresh out
of college I was not sure what to do, so I decided to take things into my own hands. One thing school librarians need to understand is that it takes time to build a 21st-century library. Throughout the four years, I applied for grants and asked for technology because I knew that gaming and technology offered a unique way for students to learn. I asked the principal a few times throughout the year, and after she received money, she purchased the resources I had requested for the school library. Using technology is like breathing for many students. As school librarians, it is important for us to keep students up-to-date and teach them to use technology properly. Changes will not be made overnight, but the situation can improve if you continue asking and fighting for what you want.

How You Play the Game

Gaming and technology are both important concepts for 21st-century school librarians to implement in their busy programs. The school library is not like the classroom with a set curriculum and a set way of running a program. The school library is a place of flexibility, fun, and learning. Even though school librarians collaborate with teachers to reinforce students’ learning on projects, literacy, and other curriculum elements, the school librarian’s main responsibility is to promote the love of reading and learning. Gaming and technology are simply great vehicles for achieving this.

Differentiated instruction is a big part of my lessons. I differentiate in two ways. First, I teach the lessons through diverse ways to ensure that students with all learning styles will learn the lesson one way or another. Second, when I provide students with activities, I make some easy worksheets, some moderately difficult sheets, and some hard sheets.

I have taught my kindergarten students to go on the laptops and read on starfall.com, a free public-service website designed to use phonics to teach young children to read. On the site my students are able to play games that reinforce their classroom learning. In class I create lessons on the interactive whiteboard to teach young students about the parts of a book. Students can then use the interactive whiteboard as a gaming and technology tool to learn. In addition, I created a lesson that helps students learn their letters and helps them to read. As a class, the students use the interactive whiteboard to read to their classmates. Students love the interactive whiteboard because they are all engaged with the same activity simultaneously.

Additionally, students watch educational movies in the school library, teaching kindergarteners to recognize, pronounce, and write letters. Kindergarten students sing in the library to learn their letters or to promote the love of reading and learning.

Upper grades have more gaming and technology opportunities in the school library. Some of the lessons include teaching cyber-safety, how to avoid plagiarism, and how to do Boolean searching so students can take advantage of search engines’ advanced features to narrow or expand searches. As a school librarian, I make presentation slides that teach these three lessons. Students are given laptops to explore the topics and write down or create their own documents or presentation slides on these topics. They play games using the school’s portal and the school library’s online public-access catalog (OPAC). In addition, students watch movies on cyber-safety, plagiarism, and advanced searching techniques. Some of the games on the portal are ones I located on the Web to further strengthen students’ skills and further learning. Some of the sites focus on author studies, biographies, database and search engine usage, the Dewey Decimal System, library skills, reading, electronic-whiteboard activities, and typing skills.

The vocabulary lesson is my favorite because students enhance their library vocabulary through gaming and technology. I created a deck of slides that introduces students to the vocabulary, and then we play a game similar to Bingo. After the library lingo game, I give students
matching or puzzle worksheets on the vocabulary. The last step for my vocabulary lesson is an interactive whiteboard game I created. On each slide I ask a multiple-choice question, such as “What is a Newbery award?” and provide four possible answers. They are placed in groups and have them work as teams to answer the questions. We work our way around the tables, and every time a student answers correctly he or she scores a point. Students always look forward to playing this game because of the competitiveness. The best outcome is that all the students know the library vocabulary. The game also indirectly strengthens their test skills because students have to read the multiple-choice questions, and use process of elimination to pick the correct answer.

Reinforcing Learning

Besides collaborating with the teachers on how to help students with their research skills, school librarians can come up with innovative lessons that indirectly reinforce and strengthen student learning. Another similar lesson that uses the gaming technique and technology is my Dewey Decimal System lesson. I conduct this lesson with grades three to five.

The first step for this lesson is to show students a movie on the Dewey Decimal System. Before the movie starts, I instruct students to take notes to reinforce their learning and to strengthen their note-taking skills. After the movie, I ask students questions on what they learned and what they want to learn more about. This is similar to the KWL chart ("What I Know, What I Want to Know, What I Learned"). After this lesson, I teach a self-made interactive whiteboard lesson about the Dewey Decimal System. I introduce the system again, and I have students do an activity that reinforces learning. The activities are usually on worksheets. Throughout the lesson students listen to the Dewey Decimal System songs, which explain what the numbers represent. Students love the songs because they can dance with the beat, and the lyrics are easy to remember.

After the songs, students use the school’s online portal to play games about the Dewey Decimal System, strengthening their understanding of the system. Some of the games include matching Dewey categories with the numbers. Others include movies or quizzes on the system.

The final step in the Dewey lesson is another question game on the interactive whiteboard. Students are placed in groups and answer questions on the board. The team that wins is given a prize.

Hands-On Learning

Other effective games in our library include creating movies on Flip cameras from student-generated scripts. For example, my first- and second-grade students created videos about respecting yourself and others. I showed students an animated clip on respect and we discussed the important aspects of respect and disrespect. After the discussion, students were told to create a movie strip that teaches other people about respect. Students were given construction paper folded into fifteen boxes. Students worked in groups and drew pictures with labels about respect for yourself and others. After creating the scripts, students cut out the boxes, and I worked with one group at a time to record their scripts. After the entire class finished, I
showed the videos to the class. Again, the games enhance learning and retention, and serve as an assessment of learning.

One of the newest lesson games I’ve started is teaching students how to keep the library clean and organized so that others can find a book when it’s needed. Using the interactive whiteboard I teach students how to use shelf markers, how the library is organized by sections, and how books are organized. Students are given a test to demonstrate their understanding of organization. After students complete the sheet, they come up to the interactive whiteboard and share their answers. A completion slip is given to students once they’ve demonstrated their understanding of the library’s organization.

As these lessons demonstrate, strategies of differentiated instruction are used to enhance student learning. Differentiated instruction identifies the distinctive needs of students and makes conscientious efforts for ensuring that all students be given proper educational opportunities and feedback suitable to their individual requirements and individual needs (Rocky Mountain Center for Health 2006). This differentiation is especially helpful when dealing with multicultural students and with students who have different learning abilities and different learning styles. A differentiated classroom offers diverse and special pathways, which help learners gain content, process ideas, think logically, and expand knowledge so that each student can learn and become successful (Tomlinson 2001).

Differentiated instruction is present through each individual lesson because each lesson is taught in a variety of ways so that all learners pick up on the lesson. For example, kinesthetic learners will learn through the hands-on activities. Visual learners will learn from the videos or interactive whiteboard activities. The auditory learners could learn through the songs and stories. In addition, when I give students individual worksheets, I differentiate them according to the students’ present skill levels. Students with a lower skill level will be provided with easier sheets. Average students will be provided with moderately difficult sheets. High-achieving students will be provided with challenging sheets. All these worksheets are created by me or inspired by Joyce Keeling’s Library Lessons for the Busy Librarian (Libraries Unlimited 2002).

School librarians understand that we cannot all become as tech-savvy as Web 2.0 maven Joyce Valenza, author of several books on use of online tools in research and instruction. However, as we all promote lifelong learning, we can do our best to help students keep up-to-date with technology. Today, gaming is a way of life for students. If we implement gaming into our lessons we can support successful learning in the library.

Khalida Mashriqi is a school librarian at P.S. 200 in Queens, New York. In 1985 her family came to the United States as refugees from Afghanistan. She is currently working on her Doctor of Education degree at the University of Phoenix. Khalida lives with her husband and two children, Shakir and Shakira.

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AASL Pre-Midwinter Institute

Tools for Transforming Your School Library Program

Speakers: Jody Howard, Kathy Lowe and Donna Shannon
Friday, January 20, 2012

Create a powerful school library program with tools based on AASL’s learning standards and program guidelines. Explore AASL’s A Planning Guide for Empowering Learners with the School Library Program Assessment Rubric and learn how to collect and use data to drive program improvement. Then learn how AASL’s Standards for the 21st-Century Learner in Action and Lesson Plan Database can take programs to the next level by building lessons cross-walked with the Common Core Standards.

For more information, visit www.ala.org/aasl/midwinter.
Martin Wallace is a prolific designer whose games often contain a polished intricacy that reflects the complexities of the topics he covers. He has been involved with over sixty board games and expansions that cover a wide array of genres: from fantasy Runebound (Fantasy Flight 2004), to train game Steam (Mayfair 2009), to historical London (Treefrog Games 2010), to economic Automobile (Mayfair 2009), to war simulations God’s Playground (Treefrog 2009), to the upcoming game Ankh-Morpork (Treefrog 2011) based on Sir Terry Pratchett’s Discworld series.

Conducted by Brian Mayer
brianmayer00@gmail.com
BRIAN MAYER: Could you take some time to talk about your history with gaming. When were you introduced to the hobby, and how has your gaming palate evolved over the years?

MARTIN WALLACE: From an early age, like a lot of kids, I enjoyed playing Monopoly and other board games. I would also make up simple war game rules to use with the little plastic figures that you could get from Airfix. At high school I joined the games club and was introduced to proper figure gaming. I also got my first taste of American war games, starting with some of the titles published by SPI. While at college I got into role-playing and some of the heavier war games, such as Empires of the Middle Ages and Squad Leader. I then took a break and dropped out of gaming, returning to it in my late twenties. It was about then that German games started appearing. I joined my local games club and was exposed to both new American and German designs, such as Breakout Normandy and Die Macher. Over the years I have moved from American war games to middle-weight German-style games. I hardly ever play a war game now, unless it is one of my own designs that requires playtesting.

BM: Are there specific game titles that have had a lasting impact on you and in what way?

MW: There are certainly some games that have influenced and inspired me. A House Divided has always impressed me as wonderfully simple design that captures a lot of the feel of the American Civil War. Of recent designs I think Agricola is a great tying together of theme and mechanics. Dominion, although not one of my favorite games, has an ingenious central mechanic, which can be developed in all sorts of ways.

BM: When did you begin to explore game design, and what were some of the elements of those first forays?

MW: I first started to design games in earnest in 1990. It took me a few years to come up with something that was worth playing more than once. These early designs usually had a fantasy or science fiction theme. On reflection they were really bad games, and it’s good that they never saw the light of day. The first design that worked was Lords of Creation. This was my first publication, printed off of a Macintosh. That was in 1993. The following year I had the game reprinted by a local printer and took it to the Essen Game Fair.

BM: Could you share some of the struggles that you faced as a beginning designer, and at what point were you able to make the switch to being a full-time designer?

MW: In the early days the main problem was finding the time to work on new ideas while trying to keep on top of my teaching career and helping to raise two children. Money also always seemed to be in short supply, as it is now! The advantage of being a teacher was that it allowed me to work part-time as a substitute teacher. Eventually, I eased my way out of that career and became a full-time game designer around 2007. The only way that I could earn enough money from game design was by publishing games through my own company, Warfrog (which later became Treefrog). The amount of money you earn from royalties is not that high; the money is all in the production and selling of games.

BM: Could you talk about your decision to make the leap to self-publishing and what challenges came with that?

MW: As with any company, the main requirement at the beginning is capital. Fortunately, I was able to secure money from private investors. The rest has been hard work. Some people think that it must be fun to work in the games industry; the reality is that there is just as much paperwork to be filled in as with any other job—tax returns, invoices, etc. However, there is the great advantage that I am master of my own fate, rather than being a cog in a machine.

BM: There appear to be many parallels between being an author and a game designer. The process often starts with an idea that becomes a rough draft. It is reworked, refined, and revised until a polished and presentable work emerges. What are your thoughts on this comparison?

MW: Being a game designer is much easier than being an author—I know, some of my friends are writers. I can turn out a game design in a matter of days, whereas an author has to struggle for months on a piece of work. The flip side is that a successful author makes a lot more money than a designer. The stages that you identify are certainly present, but there are major differences as well. Writing is almost pure creativity, while designing a game is more technical in nature, and certain problems can simply be solved by changing a rule.

BM: What is the design process like for you?

MW: I normally work on a design until I am happy with it and then present it to a potential publisher. If they take it then I usually forget all about it, and let them get on with the development and creation of artwork. On the odd occasion I have accepted a commission and worked on a specific theme for a publisher.
This can be hard work if the game does not match the initial expectations, as you cannot simply jink it; you have to come up with a final product. After a company has accepted a game, they may make a few changes. I am fairly relaxed about this as it is the publisher that is risking its money, so they should have a say over the final mechanics and look of the game.

**BM:** Many of your designs are often steeped with a strong sense of history. Automobile explores the early car manufacturers, Brass and Age of Industry look at the Industrial Revolution, and London has players rebuilding the city after the Great Fire. How much work goes into research and preparation for a particular topic?

**MW:** When embarking on a new design I will read as many books as it takes for me to find the key to theme. I usually start doing background research while completing a different game, so I may be developing a game on one subject while reading as much as possible on a different one.

**BM:** Do you ever struggle with wanting to keep certain elements or game mechanics for their narrative contribution or historical accuracy despite their not working from a game-play perspective? How do you resolve those issues?

**MW:** It is very often the case that elements that I think are important to a game have to be removed because they make the design too unwieldy. One has to be prepared to throw ideas in the bin and move on. I try to make sure the final game has the smallest rule set that can deliver the feel of the theme. As some of my games are on complex topics, that does mean they can still be pretty complicated rules.

**BM:** Trains are a central theme to several of your game designs, from your Winsome Games, to the various iterations of the Steam system, to your new game Great Western in Spielbox, the German gaming magazine. Does their appeal come from a thematic or a design perspective, and have you fully explored trains as a thematic genre or do you still have more ideas to pursue?

**MW:** I never used to have an interest in train games. It was only a request from Winsome Games to work on a design that got me into the genre. A railway theme can make for a great game as it involves economics, geography, route planning, and empire building—all good ingredients. However, I have produced quite a few train games now, so I may decide to slow down on that front in the future. I have a few ideas I would like to pursue but cannot give any details at present.

**BM:** Your upcoming game Ankh-Morpork is based on Sir Terry Pratchett’s Discworld series. How did this collaboration come about?

**MW:** The Ankh-Morpork game came about by chance. A friend of mine suggested the theme. I knew that one of my regular playtesters knew Sir Terry, so I was able to get some advice before approaching the author. I designed the game before trying to get the license. It was the positive response of the author’s fans that allowed me to continue with the project. I was also able to team up with the kind folks at the Discworld Emporium, who have been instrumental in making sure the artwork is accurate.

I knew that one of my regular playtesters knew Sir Terry, so I was able to get some advice before approaching the author. I designed the game before trying to get the license. It was the positive response of the author’s fans that allowed me to continue with the project.
Has there been a difference designing a game based on the fictional world created by an author versus games based on real history? Do you feel pressure to faithfully represent the characters and flavor of the books?

The approach to a fictional world is the same as that to a historical theme. In both cases you do the reading and then try to do justice to the subject. The problem with a lot of licensed games is that they do not care about the subject and are happy to put out a poor design knowing that it will still sell to the general public. My aim is to tie good design with good themes, so that both a gamer and non-gamer can sit down and enjoy the product. It is certainly true that there is pressure to be faithful to the source material, but then I have the same pressure dealing with a historical theme—it’s just self-imposed in the latter case. Pressure’s good—keeps you on your toes and makes you strive to do something special.

There is a growing movement of educators and librarians that are exploring modern board games as an educational resource and game design as a pedagogical tool for use in the classroom. What are your thoughts on this?

As a teacher I would often use games in the classroom. In my opinion games can be an excellent means of teaching both children and adults. Simply following rules and having to relate to other players can be educational. A lot of the children I used to teach came from troubled backgrounds and had all manner of learning difficulties. Teaching them to play a game can help with their socialization skills as well as keeping them entertained.

The other way that a game can educate you is through embedded information. If you played my game on the history of Poland then you would learn a few important facts, such as the idea behind the liberum veto and the detrimental influence of the Jesuits. I’m all for more games in classrooms. My only caveat would be that the game has to be good. Games that are intended to be educational are often poor in design; a game should be good in its own right, then it has a greater educational impact.

Do you have any favorite authors or books?

I suppose my favorite author would be Tolkien. I don’t read a lot of fiction, although I am catching up now.

Do you have any favorite designers or games?

I don’t have a favorite designer. There are designers that I admire, such as Andreas Seyfarth and Uwe Rosenberg, but I’m not a collector of any one designer’s games.

Lastly, of the games you designed, do you have a favorite and, if so, why?

My favorite game is usually the one I have just published. Those that I like to play are Automobile and Steam. Automobile is the game that I think best matches mechanics with theme, without any unnecessary complexity. The decisions you make within the game are the same ones that a real car manufacturer would have to make.

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Brian Mayer and Martin Wallace corresponded via e-mail May 2011.
Skeletal Relations

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Creating a game for third-grade students that school librarians and teachers can use in their school libraries and classrooms is a unique challenge, especially if that game is based on teaching anatomy. But that’s exactly what an instructional team from Auburn University in Alabama decided to do. The team—which consisted of a school librarian who is willing to try anything, a scientist who studies how living things move, and a professor who values collaboration and demonstration over lecture—put together a lesson that integrates technology and content with pretzels, Twizzlers candy, and an online game reminiscent of Whack-A-Mole. What might this final product look like? Answer: an edible skeleton.

The Lesson
"Edible Skeletons" was born out of an observation that pre-service teachers enrolled in a technology integration course were having difficulty integrating technology and content into instructional settings. As the professor for the class worked to help them understand the difference between gratuitous use of technology and the use of technology to further the learning of students, she was also having conversations with a graduate student who was responsible for teaching basic anatomy. These conversations triggered the development of the instructional team and the "Edible Skeleton" lesson teachers and school librarians can use to teach basic human anatomy to third-grade students. The pre-service teachers got first-hand experience with appropriate use of technology to further learning; they were the first students with whom the lesson was used.
“Edible Skeletons” consisted of three stations of instructional activities: “Bones” anatomy instruction, Anatomy Arcade, and myth writing. Each station was designed to last for thirty to forty minutes of instructional time, with a final whole-group discussion being conducted at the conclusion of all station rotations (see figure 1).

Anatomy Instruction

**Function of Bones.** To teach this new vocabulary to laypersons, the instructional team used a 3D facsimile of a human skeleton (the team called him “Bones”) that students could touch and manipulate. Attached to Bones’s skeletal system were colored index cards: green designated the scientific terms and red designated the common terms. This labeling allowed the students to learn and/or recognize the common terms and the associated scientific terms for the major bones of the human body. In addition, various colored strings were attached to Bones to indicate the musculature across a few of the joints. The students pulled the strings themselves to get a tactile understanding of how the bones and muscles work in the body.

**Learning the Language.** If the Bones station was learners’ first station, index cards were placed on the skeleton while the function of the skeletal system was described; muscles were introduced to learners; both the scientific and common names of each bone were provided.

If the Bones station was the second station, only some index cards were placed on the bones by an instructor, and the students had to fill in the rest of the skeleton with help from instructors.

If the Bones station was the students’ last station, instructors used the strings as they engaged students in discussion on the function of the skeletal system and muscular system. The conversation then transitioned into an assessment activity by removing all of the index cards from the skeleton. The students participated in a relay race in which each team had half of the index cards, both scientific and common, and was timed to see how fast the team could correctly apply the labels to Bones.

**Edible Skeleton.** As a final activity in the Bones station, the students each completed their own edible skeleton.

The edible materials were pretzel sticks, chocolate-covered pretzel twists, strawberry licorice pieces, breath mints, gummy fruit slices and rings, and caramels. The nondible materials used were cardboard paper, glue sticks, and packing tape to cover the candy. As a name of a bone was called out, using either the scientific or common term, the students would first respond with the corresponding name of the bone and its location on the body. If a scientific name was used, the students responded with the common name; if a common name was used, they responded with the scientific one. Each student would then choose a piece of candy that he or she thought best resembled that structure. For example, when “humerus” was called out, the students would respond with “upper arm,” and then students would pick up either a pretzel stick or licorice piece, glue it to their papers, and label the bone. Together the instructor and the students used food to build facsimile skeletons consisting of the bones covered in the lesson that day (see figure 2).

### Anatomy Arcade

**Online Games**

The online games that were selected for use in this sample lesson were chosen to fulfill three main roles: introduction (motivation), practice, and assessment. The online games also “[provided] a competitive environment in which learners [followed] prescribed

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**Figure 1.** Instructional roles of station activities.
The rules of the game should clearly communicate actions that are allowed and disallowed as well as what is required for a winning performance (Newby et al. 2011, 106). The two elements of student response that were used to determine winning performances were accuracy and speed of responses. Students had to not only know the correct answer but also recall it quickly.

**Anatomy Arcade.** The gaming station used the Anatomy Arcade online game site (<http://anatomyarcade.com>). Anatomy Arcade was developed by a science and physical education instructor from Australia who recognized the power of games in the teaching of complex content such as introductory anatomy (Crossett 2011). The major body systems are represented at Anatomy Arcade, but the students used only the skeletal system games for the purposes of Edible Skeletons. Anatomy Arcade is not a true social online gaming site, but it does permit the registration of players and the maintenance of leader boards. For many school librarians and teachers who cannot access social gaming sites due to online filtering policies, Anatomy Arcade might function as a compromise between full access to social gaming and static game playing without the benefit of social competition.

**The Arcade as an Introductory Activity.** Students who visited the online station first or second were directed to begin work with the Skeletal Jigsaw or Skeletal System Word Search puzzles. These puzzles do not require knowledge of bone name or function; rather they serve to familiarize students with bone names and the concept of skeletal anatomy. For students who completed those activities prior to the expiration of the station time period, the Match-A-Bone game was available. This game is a Concentration-style game that requires students to match the picture of a bone with its scientific name. A help feature within this game allows students who do not have prior knowledge about the bones of the human body to see where the bones are placed. This help feature permits the game to be used as an introductory activity. Students who visited the station second were given the option of starting with the puzzles or with the Match-A-Bone game.

The students quickly moved through the introductory activities and asked to be able to play the games during any remaining time left for their station rotation. Students used different approaches to the Match-A-Bone game. Some students elected to use a random method for flipping the pairs of cards over. Other students were more methodical in their choices of cards to flip. If she saw that students were struggling to make matches, the teacher encouraged students to describe the strategy that they were using to finish the game. From that description, she guided them toward choosing a more methodical approach. This game
proved to be more challenging for the students than the teacher initially thought that it would be.

**The Arcade as Practice.** Students who visited the station second and elected to start with Match-A-Bone or who visited third were directed to complete the Whack-A-Bone game. Whack-A-Bone consists of three progressively more difficult levels of play to complete the game successfully, players need speed and knowledge of the skeletal system. In Level 1 of Whack-A-Bone players must build the bones of subsystems of the skeletal system (arm, leg, and core), must identify the placement of bones correctly within those systems, and then must “whack” or pick out the bones of each subsystem. Scores are determined by a combination of speed and accuracy with an 80 percent mastery level being required before moving to the next level. Level 2 requires players to complete the scanning activity on a whole-body scale; level 3 requires players to identify bones by whacking them on a whole-body scale. The 80 percent mastery level is consistent across all levels of play.

The Whack-A-Bone game proved to be the most challenging game for the students to complete. Prior to assigning it to the students, the team had an additional subject matter expert review the game for accuracy and appropriateness. This professional found it to be engaging enough and challenging enough that even she had to attempt some of the levels twice to attain mastery. The challenge level for the game is increased because both speed and accuracy are taken into account when scoring the game. However, despite the challenging nature of the game, students were highly motivated to succeed.

Some students were motivated by the soundtrack. Others were motivated by the timer. Some were even motivated by the desire to get a “better score” than their classmates. The advantages of this game, that it was engaging, matched to the course of study’s outcomes, applicable in a variety of settings, and attention-getting for students (Smaldino, Lowther, and Russell 2012, 79) support its use with both pre-service teachers and third-grade students.

**The Arcade as Assessment.** As a final evaluation of learning, students completed the crossword puzzle found at the Anatomy Arcade site. This puzzle was assigned as an out-of-class activity, and students were told that they had to achieve a score of 100 percent to receive credit for the assignment. To most effectively use the class period, the instructional team elected to have students complete the assessment.
out of class rather than having the Whack-A-Bone games be used as assessment. An added benefit of the out-of-class assessment assignment was that it was text-based rather than mouse-based. This more traditional method of assessing student knowledge would allow all students, even those who might not be physically able to manipulate a mouse quickly enough to attain mastery in the arcade games, to demonstrate their knowledge of human anatomy.

Literature Connection

The team chose to have students use the myth genre for a writing activity. Britannica Academic Edition defines a myth as a "traditional story of ostensibly historical events that serves to unfold part of the worldview of a people or explain a practice, belief, or natural phenomenon" (Encyclopaedia Britannica Inc. 2011). While the details in myths amongst various cultures may differ, all seek to explain similar phenomena. Ancient myths help us to understand that all people are driven by a common desire to satisfy their curiosity.

The school librarian, who had only a short amount of time for the station, assumed that all students were familiar with myths and that they had last studied the subject matter between sixth and eighth grades. The school librarian then operated as a guide, brainstorming with students about the characteristics of myths and providing information when students could not. Next, the students completed a prewriting activity by brainstorming the elements of a myth with their partners and recording the information in a graphic organizer that the school librarian provided for them.

The school librarian instructed students to work in groups of two or three to create a myth that explained how the bones got their names, jobs,

Online Myth Resources for Games

The Edible Skeletons team found three websites that can be used to enhance the instruction of myths and can be used independently by third-grade students at a computer center or in the library.

<www.bigmyth.com/2_eng_myths.html>
The Big Myth explores various creation myths from ancient cultures through the use of simple Flash videos. With the aid of a narrator and captions, each video tells the featured ancient culture’s creation myth. The interactive map makes it easy for students to navigate and to select videos from various regions. This website is ideal for exploring the elements of creation myths as well as for comparing the common themes across cultures.

<http://library.thinkquest.org/CR0210200/ancient_greece/online_activities.html>
This Thinkquest webpage can be used in support of the study of Greek myths: Some of the activities provided on this website include identifying the Greek gods and goddesses in a game of Memory as well as solving a maze to escape Daedalus’s labyrinth. The interactive activities allow students to review the Greek gods and goddesses, while also encouraging learners to improve upon their retention strategies and problem-solving skills. This site can be used as a source for additional practice.

<http://teacher.scholastic.com/writewit/mff/mythmachine.htm>
Scholastic’s Myths Brainstorming Machine is an interactive graphic organizer that can be used in place of the brainstorming chart. Students can choose from pictures in three different groups: Setting, Gods/Goddesses, and Monsters. Students may then add effects to change the elements in the setting (e.g., change the time of day or have a volcano erupt). From the drawing, a concept map is created to outline the story, detailing the setting, god/goddess, monster, mood, and characteristics of the selected god/goddess and monster. This tool can be used to help students identify the elements of myths and stories in general as well as support learners with a limited English vocabulary.
and/or locations of the body. The title of their myths was to start with “how,” and students were to use the proper scientific names for the bones. The majority of the collaborative groups were able to write a complete myth within the allotted time frame.

A common element in the student-created myths was to use a play on words. One team took the word “fib” from “fibula,” while several groups made a connection between “humorous” and “humerus.” One student even chose to write his myth in the form of a poem, demonstrating not only his comprehension of the elements of a myth, but of epics as well (see sidebar “How the Bones were Birthed”).

Modifications for Third-Grade Students
The design team intended for the lesson to serve as an example of what could or might be implemented in a third-grade classroom. To this end, the following modifications are suggested to make the unit more appropriate for a younger target audience.

Timeline. As a unit of instruction, a single three-hour class period is much too short for third-grade students to complete the unit activities as presented. Classroom teachers and school librarians wishing to implement this unit will have several constraints on their schedules that were not present in the sample lesson. A highly structured school day with required time spent on reading and mathematics leaves little room for longer periods of time involved in complicated interdisciplinary units.

Therefore, the team recommends that the unit activities be spread out across several days of instruction. Allowing for at least three days of instruction would provide several benefits to the third-graders. First, this schedule would allow them to have enough time at each station to fully engage with the content being presented. Second, spreading out the lesson would allow them to have time for increased practice opportunities, such as small homework assignments, that would then increase the chance that learners would recall the names, locations, and functions of the bones. Last, spreading out the lesson would give those students who are not fast creative thinkers time to write a strong myth, rather than having to rely on a first-draft version of it. School librarians and third-grade teachers may also benefit from the inclusion of online resources for the myth instruction, permitting a stronger technology thread to be woven throughout the unit as a whole.

Elementary school teachers may also find using edible glue rather than glue sticks to be a beneficial
modification. Edible glue is a simple recipe made from 2 tablespoons of water and 2 teaspoons of meringue powder whisked together (Time Inc. 2011). This substitution would allow third-graders the freedom to be messy and to avoid the consequence of digesting glue when the inevitable eating of their skeletons occurs. Teachers could also use the glue to represent the body’s skin that holds everything inside the body.

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Engage and Excite Students with Educational Games

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Students think that going to school means not having much fun while they’re there, and that spending time at home means not having to learn anything new outside of homework, right? Learning is something they are made to do, something that is not their choice and not much fun. At least, that’s the way things used to be.

At some point, a brilliant teacher or parent decided that learning should be fun, and what better way to have fun learning than with a game? Using educational games to learn or reinforce lessons engages students and turns a potentially boring subject into something exciting and desirable to know! Games offer teachers and parents a new way to grab students’ attention so that they will retain information. Games have become a teaching tool, an invaluable resource for reaching students in ways conventional methods may not, or providing a means to practice a skill or subject so children do not forget what they have been taught.

If a student finds a particular subject boring or difficult to grasp, playing an educational game based on the subject can really change things around. Board games can be found on nearly any subject, and can be heavy on the educational element, or it can be a little more in the background (sneaky learning). Many games deal with subjects such as spelling, vocabulary, math, geography, science, and history, and also deal with lessons such as manners. Also available are trivia games dealing with a wide array of subjects. Trivia games dealing with current events can even spark children to read the newspaper or look at news online, opening a whole new world to them and possibly sparking interest in politics, world events, and more. If students are engaged in games, playing in the classroom or at home, they are having fun rolling dice, traveling around a game board, working as a team, or trying to win. If the educational game is fun, they will painlessly learn something.
Adding games to the school day also offers a break in the students’ day, much like recess or lunch, and if you make it an educational game, you are also reinforcing the lessons they have learned. By giving students a break in the schedule and allowing them to move around and resituate themselves around a game table or into teams, you give their bodies and minds a chance to refresh for a new lesson. Switching gears can be a sort of "reset" for students and keep their interest levels high.

One of the major ways playing games can help students is by offering a different venue for learning when the traditional ones do not work. Learning styles can generally be broken down into three types: auditory (learn by listening), visual (learn by seeing or watching), and tactile/kinesthetic (learn by physically doing). The idea is that some students learn better by listening to what a teacher says, or perhaps by watching a teacher work out a math problem, or by reading a subject on their own; and some learn best by doing something physically, experiencing it by participating or touching. Often times, a kinesthetic learner may not do well in a traditional classroom setting. However, if you add games to the lessons—activities where a kinesthetic learner can participate and be more physically active—the student may have a better chance of learning and succeeding at school.

Games are also great ways to promote other lessons and skills besides the standard school subjects. Playing games can be beneficial for students and can positively impact their emotional and intellectual development, allowing them to practice problem-solving skills in a non-threatening environment, contributing to their well-being and self-esteem, and helping them to learn to manage their feelings. When students play games, they also begin to understand how to cooperate and “play well” with others, and they practice social skills that will help them properly and positively relate to people as students grow into adults. So, even if the educational game is teaching and practicing a subject such as spelling, it’s also doing a whole lot more!

Games can be used to join events, such as the Million Minute Family Challenge, where students can join as a team and work toward a common goal of playing games for one million minutes! The event challenges people in the U.S. and Canada to get together and play non–electronic games September through December, in the hope of promoting togetherness and quality time that is not usually experienced watching television or playing video games. Teams logon to the website and track their minutes, seeing how well their state or province is doing and how close everyone is getting to the one million minute mark! The website also offers game suggestions, snack ideas, and lesson plans that may be used with certain games…perfect for the classroom!

When educational games and fun are added to the curriculum, students look forward to going to school, and not just because of art or gym or even lunch with friends. When students are engaged by games, learners feel more involved in school, and the activity of playing a game adds value that they can appreciate. It’s also another way to reach students and teach new things. Teachers and parents can even be creative with the games—offering extra points to winning teams, giving incentives that will keep students excited about learning. There’s really no downside to adding educational games to the mix!

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Visit www.ala.org/aasl/knowledgequest for additional educational gaming resources, including links to research features from School Library Media Research (SLMR).
STANDARDS FOR THE 21st-CENTURY LEARNER
LESSON PLAN DATABASE

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The American Association of School Librarians’ (AASL) Standards for the 21st-Century Learner Lesson Plan Database is a tool to support school librarians and other educators in teaching the essential learning skills defined in the AASL Standards for the 21st-Century Learner. Visitors can search the database using learning standards, topics, grade-levels, schedule types, resources and keywords. But this tool is much more than a search engine, it’s a community for collaboration, professional standards and personal growth.

COMMUNITY
The value of this tool is generated by its community of contributors and the growth peer feedback breeds. Create and publish your own lesson plans, rate and comment on lesson plans in the community and socially share lesson plans on the web.

COLLABORATION
Use the searchable database and lesson plan template as a gateway to collaboration with the teachers. Explore the database together and bookmark lesson plans, or submit effective lesson plans you’ve already collaborated on.

STANDARDS
Lead the effort in your school community to align lesson plans with the Common Core State Standards. All lesson plans published in the database are aligned with AASL’s Standards for the 21st Century Learner and are crosswalked with the Common Core State Standards.

PROFESSIONAL DEVELOPMENT
Submissions to the database are vetted by AASL reviewers to ensure lesson plans published are of the highest quality. Users will receive feedback from reviewers on their submissions and through this process will improve the quality of their lesson plans.

To ensure a lesson plan database of the highest quality, prior to submitting content AASL asks users to review the AASL Standards for the 21st Century Learner Lesson Plan Rubric and Checklist at www.ala.org/aasl/lessonplandatabase.

The lesson plan template was developed using the Action Example Template from Standards for the 21st Century Learner in Action. To better understand how the standards, strands, indicators and benchmarks comingle to create a strong lesson plan, visit www.ala.org/aasl/standardsinaction.
FEATURE

GAMES AND THE 21st-CENTURY STANDARDS — AN PARTNERSHIP
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The last few years have been an exciting time for school librarians. In our dual roles of teacher and librarian, we have been presented with two new sets of standards that challenge us to redefine how we approach education. To that end, games have slowly been gaining traction as a valuable resource for meeting these new goals.

Both sets, while they may vary in the breadth of their focus, are quite complementary to each other. AASL’s Standards for the 21st-Century Learner (see <http://ala.org/aasl/standards>) take a broad approach to address many of the fundamental skills that make students effective and self-efficient learners. Inquiry, critical thinking, reflection, and a social awareness are the driving forces behind AASL’s standards. The upcoming Common Core Standards, on the other hand, attempt to scale back the sheer volume of concepts being covered over the course of the year to exploring fewer, more-fundamental concepts in greater depth (see <www.corestandards.org>).

With an eye on college and career readiness, the new Common Core Standards seek to establish fluency in the fundamentals with a shift toward experience-based application at the secondary level and an emphasis on the importance of literacy experiences across all curricular areas.

This shift in standards invites to the table immersive learning experiences that provide complex interactions, and an authentic solicitation of the manipulation and application of content and skills. Modern board games, with their inclusive nature, shortened playing time, complexity, and strong intrinsic motivational potential are an answer to the type of learning situations needed. I would like to explore how the game experience aligns with these new standards by examining a few selected common beliefs and standards from AASL and interweaving concepts from the new Common Core Standards where relevant.

**AASL’s Standards for the 21st-Century Learner: The Common Beliefs**

AASL’s Standards for the 21st-Century Learner open with a series of common beliefs that embody the mission and values of the school library profession. These shared ideas can also be viewed within the context of gaming in school libraries. Some of the beliefs that are most closely connected with the benefits of gaming are explored below.

**AASL Belief 1: Reading is a window to the world.**

Literacy experiences provide exposure to new ideas, values, and ways of thinking, but they should not be limited to just the traditional reading exercises used in the classroom. This sentiment is mirrored by the Common Core Standards’ emphasis on literacy across the curriculum, with an especially strong shift towards encountering nonfiction. Student interaction with textual elements spans the game genres, from storytelling and word games in which the players directly manipulate the text to economic and world history games in which the text is a prominent part of the components.
Integrate this with rich and vibrant thematic settings, and students have an opportunity to not only explore various landscapes both historical and fantastical, but, along with the game’s mechanics, players are able to manipulate and interact with those elements as well. Additionally, the sophistication in today’s modern board games provides opportunities for students to encounter and decode more complex procedural reading material.

But competence, let alone mastery, requires an understanding and practice of the underlying skills needed to thrive in this type of environment and not simply a focus on the tools. This sentiment is woven throughout the Common Core Standards for English Language Arts, as well. Beginning in kindergarten and progressing through high school, the standards map out how a student’s interaction with information from multiple media sources should progress, developing from simple understanding and expression through paraphrasing and summarizing to more complex interactions that include an analysis of effect and motivation.

Modern board games, with their inclusive nature, shortened playing time, complexity, and strong intrinsic motivational potential are an answer to the type of learning situations needed.

AASL Belief 2: Inquiry provides a framework for learning.

Inquiry is about seeking resolutions to the questions and challenges that face students. The new Common Core Standards not only recognize the vital role that inquiry plays in building knowledge, they also call for flexibility and resilience during the inquiry process, especially during the high school years.

Quality games provide an opportunity for students to raise and explore deep and meaningful questions. More importantly, games wrap these inquiry opportunities in a safe environment that encourages growth by establishing the expectations for behavior within the confines of the game experience, as well as the consequences for poor decisions. Unlike real-world situations, however, the constructed world of a game allows students to continue to inquire and explore with no lasting penalties for mistakes. Each turn provides the student an opportunity to assess current success and try a new inquiry path. This safe environment, along with the inherent enjoyment of play, provides a learning space that facilitates the strengthening and refinement of inquiry-based skills.

AASL Belief 6: The definition of information literacy has become more complex as resources and technologies have changed.

How students interact with information today is wildly different from just a decade ago. While they must navigate information from a glut of sources presented in multiple formats, students also have a stronger voice in dictating the terms for their interaction with that information.

Additionally, students need to extract information and build knowledge from a variety of informational sources, both obvious and inferred. In the end, what helps games succeed most as an instructional tool is the control that school librarians and teachers have over the length of time needed to practice these skills by selecting a game resource in which the inquiry process takes the course of the entire game, a single turn, or only moments.
AASL’s Standards for the 21st-Century Learner

The four AASL standards represent the spectrum of students’ relationship with learning—starting with their first encounter with an idea or concept and culminating with how they follow through with these new skills and knowledge internally and out in the world. Selected elements from each standard area are presented here to provide a general framework for understanding how games can be viewed within the context of school library instructional standards. These alignments help to explain both the why and how of building support for the use of games.

AASL Standard 1: Inquire, think critically, and gain knowledge.

The first standard inspires a more sophisticated foray into the inquiry process, challenging students to be open, reflective, and critical in how they initiate learning and gather new knowledge. Fortunately, the demanding and flexible nature of modern board games makes them a perfect learning platform to introduce and help practice many of the concepts contained within the standard.

1.1 SKILLS

1.1.2 Use prior and background knowledge as context for new learning.

The thematic settings and familiar mechanics of games provide an anchoring point for students to begin exploring and interacting with new concepts and skills. Hare & Tortoise (Rio Grande Games), the English-language version of Spiel-des-Jahres-winning Hase und Igel, uses the well-known fable as a setting for the use and manipulation of triangular numbers. Coming from a very different perspective, Pastiche (Gryphon Games) uses the mechanic of color blending to expose students to the world of fine art. Both are examples of how games can tap into ideas and skill sets that the students have previously established, and push learners further in new and unknown directions.

1.2 DISPOSITIONS IN ACTION

1.2.5 Demonstrate adaptability by changing the inquiry focus, questions, resources, or strategies when necessary to achieve success.

When exploring board games as an inquiry-strengthening resource, one thing that sets them apart from other resources is the open nature of the choices involved in obtaining success. While other experiences may offer the illusion of choice, they can often be guiding learners down a path that has been predetermined and scripted. With games, students are constantly adapting to the changing state of play, adjusting their questions and decisions based on the availability of information and resources.

Games such as Dominant Species (GMT Games) provide a criterion by which students can measure success in the form of victory points that they earn through different actions over the course of the game. Here, students play as different animal classes trying to populate their species over as much of Earth as they can, as well as dominate the areas they inhabit by specializing or diversifying in genetic traits. While rules do govern the different actions that can be taken over the course of the game, it is up to the student to explore and affect the game state through the timing and frequency of the selection of those actions. Players’ choices come as the result of meaningful questions drawn from their current status and how that relates to their goals, both short-term (turns) and long-term (end-game). Depending how they are progressing, students may need to raise new questions and adjust how they utilize the resources and information they have available.

So a student may be taking the “Speciation” action in an effort to introduce new species onto the board, knowing that having the most species in an area is a way towards scoring points and winning. But other players may also be taking this action, lessening the opportunities for scoring. The student then needs to question the value of continuing this pursuit, examining what other opportunities are available and the steps needed to shift the player’s efforts and resources in a new direction.

Quality games provide an opportunity for students to raise and explore deep and meaningful questions.

This adaptation is not so different from a student exploring a research topic and discovering that the topic will not be as fruitful as other related ones. The student needs to determine how to best shift topics and to identify the resources he or she has already accumulated that can be invested in the new pursuit. This is an invaluable skill that can quickly be discouraged if a student is not given opportunities.
to rehearse in situations that do not have permanent consequences. Unfortunately, students are often burdened with the expectation that they possess this rather sophisticated coping strategy and then are penalized by poor grades when they are not successful. With games, students are provided with a safe and structured environment in which they can develop an adaptive approach to learning.

AASL Standard 2: Draw conclusions, make informed decisions, apply knowledge to new situations, and create new knowledge.

While the first standard challenges students with a more thoughtful approach to the collection of information, the second standard raises expectations about how the student uses the information after the point of discovery. Games help by providing authentic learning environments that require students to reflect upon and interpret information encountered, to make connections between available elements, and to test their interpretations and conclusions through their choices in the game.

2.1 SKILLS

2.1.3 Use strategies to draw conclusions from information and apply knowledge to curricular areas, real-world situations, and further investigations.

Marrakech (Gigamic) is a game in which players move a rug merchant around a Middle Eastern market and place their rugs to form groupings. The merchant moves based on the roll of a non-traditional die (1, 2, 3, 4). If, on a player’s turn, the merchant lands on an opponent’s rug grouping, the player who rolled the die and moved the merchant must pay the owner of the rug grouping 1 dirham for each space that the grouping covers. The larger the grouping, the more money the player has to pay. Before the player rolls the die though, he or she can choose to change the direction in which the merchant is facing.

While a seemingly a simple choice, the best outcome derives from understanding that probability and the unequal distribution of numbers on the die should be the guiding factors when deciding which direction to face the merchant. This concept is not expressly stated though. Nothing screams, “This is a math problem and you should use the principles of probability to help you with your decision!” Students need to build an understanding that situations do not follow formulaic problem-solving prompts. It is imperative that learners develop the strategies that allow them to analyze the information available and choose how best to interact and apply that information to their pursuits.

The new Common Core Standards also recognize the importance of this approach by emphasizing the need for experience-based applications of curricular concepts at the secondary level. Games again become an invaluable resource as they can provide dynamic environments that mirror real-world situations that range from business market simulations to group leadership opportunities to ethical situations.

2.3 RESPONSIBILITIES

2.3.1 Connect understanding to the real world.

What students learn in school does not exist in an educational vacuum despite what they may think. Educators can demonstrate the real-world “how” and “where” of what is being discussed in the classroom, but the wall that they continually come against is composed of perceived distance and the apathy that distance creates. Students often feel too far removed from the world of adults, where careers and decisions require an understanding and application of the fundamentals they are learning in the classroom. And that distance diminishes meaning, which in turn can make the best of contexts impotent. Placements and internships are wonderful ways to bridge that distance, but can often be infrequent due to time and money. So educators need other meaningful and immediate opportunities to provide real, non-classroom applications of content and skills, and that is where games can help.

There is no denying the ability of an authentic game experience to elicit an investment of time and energy on the part of the student. Think of the research done by kids trying to get past a particularly hard level in a game or building an unbeatable deck. They do so because the task is meaningful in a very immediate way; it is a part of their real world. With games, students are provided an opportunity to discover and engage with curriculum deeply and in their
own way. Failing to highlight these experiences that are meaningful to students is a wasted opportunity.

**AASL Standard 3: Share knowledge and participate ethically and productively as members of our democratic society.**

Standard 3 emphasizes the student’s social responsibility as a participant in a larger learning community. How students interact and share with others develops from the opportunities that they have to interact with the larger learning community. By and large, games are a social experience, especially board and card games. They provide a platform for building self-confidence and social literacy by allowing students to explore the concepts of ethics, teamwork, and leadership.

### 3.2 DISPOSITIONS IN ACTION

#### 3.2.1 Demonstrate leadership and confidence by presenting ideas to others in both formal and informal situations.

Providing opportunities for students to share their ideas with others is not difficult—simply ask them to stand in front of the class. Giving them the chance to build confidence in a nonthreatening way is the challenge. Cooperative games, a genre in which the players work together against the game system, provide a valuable resource to aid educators as they help students develop confidence in their ideas and conclusions.

Pandemic (Z-Man Games) is a cooperative game in which each player is a specialist for the Centers for Disease Control and Prevention in Atlanta, Georgia. The students have to work together to control the spread of four diseases across the globe and try to find the cure for each. The students have to process a wealth of information including: how much the diseases have spread across the world, where they have spread in the past, how many outbreaks have occurred, where each player is located, and what resources players have at their disposal to help. Since success is possible only by the group and not an individual, each player’s turn is a discourse by the group on the best possible actions. Over the course of the game, students soon learn to trust the observations and conclusions they share as the group makes progress. If the group fails, they can simply set up the game and try again.

**AASL Standard 4: Pursue personal and aesthetic growth.**

Games naturally elicit curiosity, exploration, and growth due to a variety of intrinsic characteristics, which include theme, mechanics, interaction, and aesthetics. More simply put, students relate to games in many different ways and students continue to come back because games are fun.

### Summing It Up

AASL’s Standards for the 21st-Century Learner and the new Common Core Standards represent an educational shift towards preparing students to deal with information and not simply teaching them towards it. But this shift is going to require educators to use new approaches for engaging our students. Students must be given time to explore and immerse themselves in the curriculum in a way that is enriching and meaningful to them. Games are becoming more recognized as a medium that can provide these experiences. But remember, games are just a tool and not every tool is appropriate for each situation. With thoughtful selection and application, an immersive game experience can have a powerful and lasting impact on the intellectual and personal growth of a student.

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**Brian Mayer** is a library technology specialist for the Genesee Valley Educational Partnership as well as an independent library consultant. The focus of his work is on the use of modern board games in school libraries as a way to engage students, build literacy, strengthen social skills, and reinforce the curriculum. Brian is coauthor of the book Libraries Got Game: Aligned Learning through Modern Board Games (ALA 2010). His work in developing a nationally recognized model for games as resources is available for viewing at the Genesee Valley School Library System’s Game Library [<http://sls.gvboces.org/gaming>].
Become the national model for exemplary school library programming. Apply today!

The NSLPY Award, guided by AASL's Empowering Learners: Guidelines for School Library Programs, recognizes school library programs that meet the needs of the changing school and library environment. Exemplary school library programs empower learners to be critical thinkers, enthusiastic readers, skillful researchers and ethical users of information.

The prestigious Obelisk and $10,000 will be given to three school library programs that are fully integrated into the school's curriculum.

Application Deadline: January 2, 2012

www.ala.org/aasl/awards

The 2012 NSLPY application and eligibility requirements are available on the AASL website.
NATIONAL SCHOOL LIBRARY
PROGRAM OF THE YEAR AWARD CRITERIA

The chapters referenced in the criteria are from Empowering Learners: Guidelines for School Library Programs.

FOUNDATIONS
1. Describe the school library program mission, goals, and objectives as they relate to the mission, goals and objectives of the school and district. (Chapter I, pages 7–8)
2. Describe the long-term improvement plan for the school library program. (Chapter III, page 30)
3. Describe the policies, procedures, and guidelines that support equitable access to ideas and information throughout the school community. (Chapter III, pages 37–38)

BUILDING THE LEARNING ENVIRONMENT
Provide evidence of how the school library program demonstrates:
1. a participatory culture “where everyone is a teacher, learner, producer, and contributor.” (Chapter I, page 10)
2. flexible and equitable access to physical and virtual collections of resources that support the school curriculum and meet the diverse needs of all learners. (Chapter III, pages 35–34; Appendix C: “An Interpretation of the Library Bill of Rights,” pages 53–54)
3. active and participatory learning, resource-based learning, collaboration with teaching staff and appropriate hours of service, including a flexible schedule. (Chapter III, page 33)
4. a well-developed collection of resources in all formats that support curricular topics, are suited to inquiry learning and meets the needs and interests of learners. (Chapter III, pages 38–40; Appendix C: “An Interpretation of the Library Bill of Rights,” pages 53–54)

TEACHING FOR LEARNING
Provide evidence of how the school library program demonstrates:
1. instruction based on current best practices and current research in school librarianship, education, and educational technology. (Chapter III, pages 43–44)
2. instruction based on AASL’s Empowering Learners: Guidelines for School Library Programs and content-area standards. (Chapter II, page 20)
3. collaboration with a core team of classroom teachers and specialists to design, implement, and evaluate inquiry lessons and units in order to enable members of the learning community to become effective, independent, lifelong users of ideas and information. (Chapter I, page 17; Chapter II, pages 24, 26, 28)
4. instruction through the library program involves inquiry-based learning, information seeking and use, 21st century technology tool integration, and knowledge production to help students develop their abilities to inquire, think critically, gain, and share knowledge. (Chapter II, pages 25–26)
5. instruction through the library program involves teaching reading comprehension strategies, multiple literacies, and reading promotion to support students in reading for information, pleasure, and lifelong learning (Chapter II, pages 21–24)
6. job-embedded professional development through building instructional partnerships with classroom teachers, specialists, and administrators to learn, practice, and spread innovation throughout the learning community. (Chapter III, pages 43–44)

BUILDING COLLABORATIVE PARTNERSHIPS
Provide evidence of how the school library program demonstrates:
1. the representation of stakeholders in developing the library program and the collection through an advisory team. (Chapter III, page 38)
2. collaboration through modeling as well as collaboration with students by involving them in determining their learning processes and products. (Chapter II, pages 20–21)
3. partnerships at all levels with school and district administration to support and implement collaboration. (Chapter II, page 20)
4. partnerships with the wider educational community (parents, community organizations, museums, academic and public libraries and others) seeking their expertise, resources and assistance for student learning. (Chapter II, page 20)

ADVOCACY AND OUTREACH
Provide evidence of how the school library program demonstrates:
1. a long-term advocacy plan that moves beyond public relations and marketing, by analyzing and linking library goals to stakeholder goals and the issues that reflect a common agenda. (Chapter III, pages 41–42)
2. advocacy through representation on building and district committees, faculty/grade-level teams to promote the program as an integral part of education and teaching and learning (Chapter III, page 41)
3. a plan for communicating with administrators about the library program mission and goals that links to concrete evidence of student achievement. (Chapter III, pages 41–42)
4. regular communication with teachers, students, and parents, making meaningful connections through resources, initiatives, and activities. (Chapter III, page 41)
5. relationships and communication with local, state, and national decision makers to communicate the mission of the program and the impact on student learning. (Chapter III, page 41)
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!

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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

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.
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 mastering—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 fifteen 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 free game-based-learning platform and curriculum called Gamestar Mechanic [http://gamestarmechanic.com](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 (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 PhD dissertations at NYU and the University of Wisconsin, Madison.

**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 exciting 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.

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 (<www.brainpop.com/games>) 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>.

Join Brian Alspach, Executive Vice President of E-Line Media at the AASL 15th National Conference & Exhibition in Minneapolis, where he will present the concurrent session, Leveling Up From Player to Designer on Saturday, October 29 from 8:00–9:15 AM. Find out more about sessions at www.aasl11.org/programs/concurrents.
• 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/11>.

Other youth game development contests include:

• Kodu Cup Challenge: This is a game programming challenge for nine-though 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.imaginencup.com>.

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

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!

Alan Gershenfeld 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.

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Making Gameplay Matter:
Designing Modern Educational Tabletop Games

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One of the great failings in educational game design is a focus on the question-and-answer model of gameplay. This type of educational game has players engage in some sort of time-wasting activity like rolling a die and moving, and then the focus of the game, the activity of answering a question, is triggered. Thousands of educational games use this roll-and-move model for gameplay inspired by the popularity of Trivial Pursuit. Many librarians and educators creating games for their patrons and students revert to this question-asking model because it is so familiar. However, a different approach, in which the gameplay emerges from the content, can create board game experiences that are vibrant, motivating, and provide opportunities for deep engagement with the material.

Improving the Trivia Game Model

At its core, the trivia-game model for educational games is similar to a traditional pedagogical tool: quizzes. Questions are usually short-answer or multiple-choice, and players are asked a question while everyone else sits quietly. The player either knows the correct answer, or is wrong and is told the right answer. If the goal of using games in the classroom is to allow players to demonstrate previously gained knowledge, then the trivia-game model may be appropriate. However, this trivia-game model can be improved for a more engaging experience in the classroom.

One key problem with this model is that only one player is engaged with the game activity at any time, so developing a mechanism that involves more players can allow everyone to be more involved with the game. Having all players write down guesses at the same time is an improvement, but the commercial game Wits and Wagers takes this a step further. In Wits and Wagers, players all write down a guess to a question with a numerical answer, and then all answers are revealed and players place bets on which answer is closest. To use this interaction in an educational setting, adding a discussion period once the players’ answers are revealed would allow players to learn more from one another. This game model does two things: first, it involves all players during each question, and second, it rewards players for being able to pick out a correct answer or pick out the person who should know the answer. It removes the “player on the stage” model of a traditional trivia game, so all players feel more comfortable being engaged with the game.

Another model that can improve the trivia-game model is to take it in the direction of a game show. Rather than have small groups playing their own games, in the game-show model, everyone is engaged in one large game. The traditional game-show model is designed to have a few players compete while the rest watch, which fits into the traditional classroom model. That said, many game-show models can be turned into a large-group model by putting players in teams and treating each team as a player in the game. Each team can then confer on the questions and write down their guesses. This can still be done using the game show metaphor, and allows everyone to be engaged. Even the game of Wits and Wagers can be extended to an entire class by having groups come
up with initial guesses, selecting groups to say their answers to provide the set of the possible guesses, and then allowing groups to place wagers on the best answers.

At the heart of these modifications is the concept of player engagement. When creating a game experience, it is important to think about how all players can be engaged with the game experience as frequently as possible. This concept is one that has been seen in many modern board games and can apply well to educational games, too.

### Moving Away from Questions

A better approach to educational design is to move away from asking questions. Yasmin B. Kafai talks about the difference between the extrinsic and the intrinsic integration of content when designing games about topics (1995). The trivia-game model is an extrinsic integration of content, as the topics of the questions could change while the underlying game remains the same. This type of game is relatively easy to create and is also more flexible in that it is adaptable to different topics. Games with extrinsic integration of content can be used when a quiz or exam would be appropriate, as such games are more focused on demonstrating existing knowledge than learning new knowledge.

Games with an intrinsic integration of content have the learning elements built into the game mechanisms, so that the engaging elements of the game are also teaching the desired content (Habgood, Ainsworth, and Bedford 2005). Research by M. P. Jacob Habgood and Shaaron E. Ainsworth demonstrated that players learned more from games with intrinsic integration of content than they did from games where the content was extrinsic to the gameplay (2011). To create these games, the first design constraint is: “Do not ask questions.” Instead, the design goal is to locate the game within the content.

Two approaches to bringing games with intrinsic integration of content into the class are possible: adapting commercial games and creating new games. Adapting commercial games is the easier approach, but the challenge is finding an appropriate match between the games and curricular content. Video games like Civilization and SimCity are typical examples provided for this type of content (Lee and Probert 2010). For board games, a useful resource is the book *Libraries Got Game* (ALA 2009) by Brian Mayer and Christopher Harris, in which they look at modern board games that are not designed as educational games and map them to school curricula; those interested in exploring the path of using existing board games should explore that book for further details.

### Creating Original Games

The focus for the rest of this article is on creating original games for the classroom. While this is the most time-consuming approach, instructors can control how the content in the game maps to curricular goals. If the goal of having games in the classroom is to help students acquire content, then games that provide an intrinsic integration of content with gameplay are the appropriate choice.

Games can be created for different platforms. The focus in this article is on board games, but games can be created as other forms of non-digital games such as card games, role-playing games, or live-scale simulations. Through development kits, digital platforms include browser-based games, apps to run on phones and tablets, and console games. The choice of platform may be dictated by resource and technology availability. Games can be created for multiple platforms; increasingly, games that were originally developed as board games are now available as e-boardgames on consoles and computers. Many video-game designers start by creating a “paper prototype,” which is, in essence, a board game. Therefore, while the focus in this article is on board games, many of the lessons within apply to other types of games.

### Generate Student-Centered Learning Outcomes

The first step in developing a game for the classroom is to determine the content that will be taught to players. Using student-centered learning outcomes is the best way to do this, as developing those outcomes will require a focus that starting with a general topic or book chapter does not. By aligning these outcomes with state standards, the game becomes a justifiable use of classroom and staff time. What are the impacts that the game should have in the lives of the learners? Just as with any creation of outcomes, considering outcomes that are high on Bloom’s taxonomy can result in games that are more likely to create a significant impact on the players.
A common pitfall for educational game designers is to lose focus on the learning outcomes and focus instead on other aspects of the game. Creating a fun game experience can be a fun activity in itself and can lure a designer away from the learning outcomes. As the game is created, the designer needs to step back regularly and ask, "Does this advance the learning outcomes?" Whenever the designer is faced with a decision about rules, mechanisms, or the play experience, the learning outcomes should guide the design. This focus will allow the design to be consistent in advancing the goals of the game.

Decide on Elements of the Game: Once the outcomes have been selected, the next step is to consider the elements of the game experience. The game experience is bigger than just the game; it includes the game, the interactions between the players, and the setting in which the game is played (Nicholson 2010). All of these come together to form the game experience, and it is important to consider these elements at this time. Key elements to consider at this point are the intended settings, the number of players, and the type of player engagement.

Settings: The intended settings for playing the game are an essential consideration. A game that is to be played in a shared quiet space should not have a heavy emphasis on players interacting loudly, while a game designed for playground use should have very few components and easy-to-remember mechanisms. If a game has a complex component that is difficult to create, then that will be a hurdle in making many copies of the game for classroom distribution. Thus, the types of interactions between players, the component choices, and the cost to create the game all need to be considered at this point.

Audience and Number of Players: When thinking about the game experience, the designer also needs to consider for whom the game is designed. The first decision is to determine if the game will be designed as a single-player experience or a game that players play together. While tabletop games can be designed for one player, they are best used for small numbers of players engaging with each other. Another possibility is to create a game that engages a large number of players simultaneously; examples include a clue-based treasure hunt, a larger-scale simulation, an alternate-reality game, or a game-show-type experience. One interesting model for engagement comes from the German game *Fische Fluppen Frikadellen*, where multiple copies of the game can be used at the same time. Each copy of the game represents a different town with a market for goods, but players can sail to other towns by getting up and changing tables to take advantage of better prices elsewhere.

Type of Player Interaction: Another consideration is what type of player engagement the game will require. Two dimensions must be considered: do players play synchronously or asynchronously, and how do players interact with each other? Some board and card games have players playing in real time against each other, which can be appropriate to reflect a real-world situation under time pressure. Many video games have a time-based element at their core, and students comfortable with time-based video games will be drawn to live-time board games.

In a multiplayer game several levels of interaction among players are possible. In one model players don’t interact, but play the game at the same time, attempting to solve the same puzzle. Conversely, the game could require significant direct interaction, such as a zero-sum game where one player wins by taking money or territory from others, or indirect interaction, where players will all improve their situation in the game, and the winner is the person who does the best job. Another option is to create a cooperative game where all players are working toward the same goal, and win or lose as a team. Another model found in several modern board games such as Shadows over Camelot may have one player working in secret against the rest of the group.

Design Document: Once all of these questions have been answered, the decisions can be formalized into a design document. The purpose of this tool is to document all of these decisions so that anyone involved with the game can see the core decisions made about the game and why. This document is also valuable as a justification tool; if design decisions have been made that tie back to the learning outcomes, then the purpose of the game can be defended against later challenges, and justifications for design decisions can easily be articulated.

Integrating the Content

The next step is to integrate the content. The learning outcomes can be used as a guide to selecting what pieces from the content will be most useful, as the content selected for integration into the game should support the learning outcome. By being guided by outcomes, the designer can focus on the content that is most important; having a deeper focus on a few pieces of content is more effective for long-term retention than having a broader focus on many pieces of content.
Link Challenge and Content: After selecting the content, the designer has to figure out the game in the content. This can be the biggest challenge in game design, and all of the limits put into place up to this point are there to help the designer focus in on finding the game. At the center of any game is a challenge, and to make a game that engages the player in content, the challenge needs to come from that content. This is the most important step in connecting the game to content; if the challenge in the game does not relate to the content, then the key aspect of the game with which the players will be mentally engaged will not be something that is leading to the learning outcomes.

Create Roles Appropriate for the Context and Content: Many games are, at their core, about resource management. These resources could be money, time (as represented by game turns or actions within a turn), people, property, or even social capital in a role-playing game involving relationships. Players have to decide how to spend their resources to accomplish game goals, and there is typically some tradeoff between risk and reward.

The designer needs to develop the role of the players in the game to contextualize the challenges. In many cases, players take on a role that is in line with the topics to be explored. These roles may come from the content in a subject like literature or history, or the roles may be related to individuals using the content in a real-world setting when looking at content like mathematics or science. Another option is to create a game that is more abstract based upon the content, such as having players take on the role of molecules in a chemistry game or a verb tense in a game about language arts.

Explore Possibilities for Mechanics: The underlying game mechanisms in an educational game serve as the tool that connects these different elements. These mechanisms enable the players, within a role, to engage with the central challenges of the game. At this point the designer needs to do research by exploring the mechanisms used by other games. To use a crayon analogy, if all of the crayons the designer has to work with are Monopoly-, chess-, Trivial-Pursuit- and Scrabble-colored, then the resulting picture will look like one of those games. By exploring the wide variety of modern board games, designers will add many more crayons to their design toolkits. Because many designers create games without exploring the world beyond mass-market games, too many new games look very much like games that are already in existence.

Another method to learn about different game mechanisms is to talk with game enthusiasts, such as students or local game groups; if all of the rest of the decisions have been made, a game enthusiast should be able to help the designer with suggestions for different game mechanisms. The BoardGameGeek website <http://boardgamegeek.com> is an incredible resource for game designers, as it documents thousands of different games and supports search features to allow the exploration of games based on their mechanism. Finally, board game reviews, such as the author’s video series Board Games with Scott <http://boardgameswithscott.com>, will allow the virtual exploration of a wide variety of different games.

This process of building the gameplay out of the learning outcomes and the content is a challenging one, but, if done well, can result in a game that can teach, motivate, and engage learners, and help them develop a long-term understanding of curricular content in ways much more effective than a simple trivia-game model.

Developing and Testing the Prototype

After fleshing out the design document, the next step is to create a prototype. This prototype can be made of very basic items, such as poster board, index cards, and basic components like dice and flat beads. The concept of “rapid prototyping” comes into play here; the initial prototypes should not involve more art or production than what is needed to test the game. Cards can be handwritten on index cards, or developed in Microsoft Word or PowerPoint and printed on cardstock, and then cut out. A board can be printed on paper and mounted on a foam core board.
Playtest and Review: Playtesting and revising is a significant part of the design process. Many times, a game cannot be completed on its first play, and the designer should be prepared to abandon test games. It is important to convey to playtesters that the purpose of playtesting is not for them to worry about winning; rather, the goal is to explore the game space, and see what works and what falls apart.

During this process, the designer should also work on writing the rules for the game; writing rules is a challenge, but the process will help to solidify the game. This is also a case where the BoardGameGeek website can be valuable, in that many rule sets have been uploaded to explore. Playtesting and rewriting the rules are iterative processes in which each test and revision will help to make the game better.

Playtesting involves two risks. The first is the temptation to correct a problem by adding to the game. Adding a rules exception or a new mechanism may solve one problem, but many others can be added. While adding something seems like a good solution, removing something is usually the better solution. Discarding something that is part of a creation can be hard for a new designer, but keeping a game simpler is usually the better choice in creating a game for the classroom. The cognitive load for the players should be focused on exploring the content, not on remembering exceptions to rules.

The other risk is that the cycle of playtesting and revising can draw the game away from the learning outcomes, so the designer must continually think back to the outcomes to bring the game back in line with the goals and learning outcomes. After every few rounds of revisions, the designer should review the learning outcomes to ensure they are still part of the game.

Get Results and Feedback from Typical Players: Once the game is complete, it can be tested in the classroom. Employing a before-and-after test can be useful to see if the game is making a difference in students’ learning. By having some students use the game and other students use other pedagogical tools, the designer can see how much of a difference the game makes. Feedback from the players is important to the process of making the rules more clear and making the game work more efficiently.

Publish!

Once the game is finalized, the designer has several options. One option is to submit the game to a game publisher that publishes similar games, although this can be a long process; it can easily take two to three years from the time of acceptance before a game is published. Another route is to look at a print-on-demand service like Gamecrafter.com where designers submit the game and then anyone can pay to print one copy of the game. A third option is to turn the game into a print-and-play game where anyone can download a copy of the game, print it out on their own paper, cut it out, and play it. The game can be packaged as a PDF file and sold to other educators.

Conclusions

The process of building a game that has players engaging with course topics (instead of simply asking questions about the topics) is challenging, but can result in a game that is much more effective as a pedagogical tool.

If creating a game yourself seems like too much of a challenge, another approach is to have students create games! An instructor or school librarian can use the process presented in this article with groups of students, using game design as a pedagogical tool. While the resulting games may not be as tied to the learning outcomes as those created by teachers and school librarians, the process of game creation will help those students to spend much more time deeply considering various aspects of the material.

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You know how you get your roster three days before school begins, and you red-flag the difficult kids before you make a seating chart that places each of them on separate continents? Be warned that if you offer a video game class, you may wind up with more so-called “difficult” kids than continents. As a second-year teacher-librarian with negligible classroom management skills, my imagination ran wild with visions of my failure to maintain law and order in my new last-period enrichment class, Video Game Design.

On our first day together, I splattered students across the computer lab as best I could and told them, “Welcome to Video Game Design. I don’t know much about video games, but I’m hoping you do. I do know something about computer programming, and that will help us. Each of your computers has a free program from MIT called ‘Scratch.’ We can use it to make our own video games. We’re going to put our brains together this trimester, and I hope we’ll be able to make some cool projects. Please double-click on the cat. This will open Scratch.”

Thus began my video game class, which, like many teaching endeavors, involved more learning on my side than teaching.

MIT’s Scratch (one of the 2010 AASL Best Websites for Teaching and Learning)

“We’re going to put our brains together this trimester, and I hope we’ll be able to make some cool projects.

Please double-click on the cat. This will open Scratch.”

Giving students a chance to play with their content and express their knowledge in new ways is an opportunity to reach more learners and create deeper understandings.

Mary Fran Daley
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L4L: iThink, iCreate, iShare, & iGrow
School librarians can and should be leaders in their schools on many fronts. In our endeavors to be all things to all people, we need to remember to be technology pioneers. If you’re not a pioneer in the technosphere, you’re a dinosaur, so let’s not become passé. Technology may not be a panacea for education, but it certainly is one of the most powerful tools at our fingertips to do so much more with less, as we are increasingly asked to do. Technology is not the element we seek—it is not the thinking, the creating, the sharing, the growing—but it certainly can be a catalyst we cannot ignore in achieving these goals.

So a technology trend of the moment is gaming to learn. Let’s embrace that and try to take it one step further. As Ross Todd calls us to “rethink, reimagine, and recreate” school libraries that are “dynamic learning environments” (2008, 19) let’s fully utilize the myriad of new technology-driven assessment opportunities, particularly games. The crux of gaming to learn really lies in having fun. A school librarian might embrace gaming because it is a tool to grab that student who might otherwise fall through the cracks. Just as Carol A. Gordon and Ya-Ling Lu exposed how “low achievers had a strong preference for alternative reading materials, which has implications for the way schools structure reading for adolescents who are struggling readers” (2008), maybe my “difficult” students’ experiences can inform how we structure alternative assessments to be more authentic and engaging.

Before I agreed to teach the video game class, I struggled with the idea. I didn’t have time to do one more thing. I didn’t know much about video games. I couldn’t decide if it was central to my mission as the district’s sole school librarian. I did, however, think teaching the course might be fun. I also wanted to be rehired at the end of my first year of teaching in a state that seemed to be abruptly turning on its teachers. So I took the leap and said, “I can teach a class about making video games!” I didn’t expect what unfolded, but the class turned out to be positively essential to my mission. My students helped me realize that my mission is not only about the perceived “library stuff”—the book collection, the system changeover, the databases, the information literacy—my mission is about the Standards for the 21st-Century Learner: the thinking, the creating, the sharing, the growing. Everything else in the school and the library fits into these standards, not vice versa, including stepping out of the library to teach a technology class whose only initial objective was fun learning.

Think
Games are about pasting together bits of logic into rules. If you can work the rules, you get rewarded. Creating a game involves weaving a web of content together to challenge your player. It requires deep understanding of your content and your game-making tool, such as MIT’s Scratch (one of the 2010 AASL Best Websites for Teaching and Learning). My Scratch students learned about science, digital storytelling, x/y axis placement, and social interaction.

How do I know they were L4L-ing? For some of my students, this was the first time I saw them really care about their work. They were smiling while working. They were teaching me new programming tricks. They were praising, questioning, and polishing each other’s work. These “difficult” students were the learners of my dreams because they were having fun. They were unmistakably in states of what Mihály Csikszentmiháli calls “flow” (1990). These same students muttered lamentations to themselves when I introduced their research papers, failed to hand in their assignments for my STEM class, and were sometimes branded as being “difficult” for their behavioral and learning issues. But when they started to get the hang of Scratch, their learning became magical.

The complexity involved in creating a game really comes to light when you write your rubric for a game assignment. The higher-order thinking skills that are involved cannot be missed when you try to untangle these assessments. Some of the games created by my students were a window into creativity through media mastery, even when the games were weak in subject content. I consider media literacy to be a critical 21st-century student outcome, as do the people at P21 (the Partnership for 21st Century Skills <www.p21.org>), so I didn’t mind when media understandings were sometimes the primary student outcomes.

Create
Video games are works of art. They are feats of visual imagery, film, and logic. My kids created beautiful backgrounds, sprites (a.k.a. characters), animations, and story lines. Games can be a feast for the eyes and the heart. What might be of more interest to most school librarians is that games can also be a magical dance with content from any subject area. My students’ games were mostly about math and science. If we’d had more time, we could have made some great games using material from social science or humanities subjects. Giving students a chance to play with their content and express
These “difficult” students were the learners of my dreams because they were having fun.

their knowledge in new ways is an opportunity to reach more learners and create deeper understandings. My students particularly loved looking for ways to use humor in ways that were barely school-appropriate. Humor is not only fun, but it also hints at Benjamin Bloom’s concept of synthesis (Anderson and Krathwohl, 2001).

Share
All of the collaboration I was trying to force in my STEM and library classes came organically in our video game class. These students, who in my previous experience avoided academic interactions, were constantly seeking and providing good feedback, and creating together. Some were even finally the peer teachers after hefty
careers of being the peer learners in their group work assignments. I attribute this ease of collaboration to the catalyst of technology.

As Seymour Papert (1980) might have predicted, my students interacted largely with each other, and not with me. They were teaching each other, critiquing each other, and encouraging each other. It was beautiful.

Grow
Some of these kids were shining students for possibly the first time in their middle school careers. Some just had a good time while learning something new. One parent reported finding her (“difficult”) child under the covers with a laptop making games when the child was supposed to be sleeping. A few class members really struggled with their learning, but they all worked hard, despite the absence of any grades for their work.

This class wasn’t a profound experience for every child that took it, but it was a positive learning experience for a few students who didn’t come by positive learning experiences easily. One of my most "difficult" students told his in-class support teacher from the previous school year, "Scratch is my only class that doesn’t suck." This student was working really hard in my class. This student was not known for academic achievement. This student made beautiful, original, and fun games. This was a big deal for me and my student. My students’ games were not all brilliant dances with content, but they were feats of media-mashing, logic, and additional understandings. That said, had we been in a content-specific environment, with specific content goals, their game assignments could have been augmented to be expressions of their understandings.

L4L Lessons
Seymour Papert proposes in Mindstorms that emerging technologies not only present their own learning opportunities, but can also fundamentally change how children learn (1980). I don't know how

Free Video-game-making

Scratch
Learn Scratch
Alice

far that theory goes, but creating video games certainly impacted the learning of students who were gifted in their own ways but turned off by other means of schooling. We don’t have to stop and drop everything we’re doing in the school library and other classrooms to go and teach kids how to make video games. We do, however, need to pursue any way we can reach every learner.

School needs to be fun or at least tolerable at every possible moment. Attaching our tactics to what makes our students light up is in our best interests because it is in their best interests. Teaching video gaming might not be our job, but connecting teachers and students to tools for integrative, authentic assessments is. In your newsletter, on your school library webpage, and in your professional-development session, spread the word about using Alice, Squeak, Greenfoot, or Scratch to think, create, share, and grow. You just might give a kid a chance to enjoy learning, and thus have a chance at learning for life.

Mary Fran Daley is a library media specialist and STEM teacher in a beautifully small New Jersey middle school. She moonlights for the Youth Services Department of the Somerset County Library in Bridgewater, New Jersey, and is a friend of the Center for International Scholarship in School Libraries (CISSL). Her article “Free Online Tools for Serving Teens: Some Great Technologies to Try and Four Verbs to Live By” was selected to appear in “Best of YALS” publication Teen Read Week and Teen Tech Week. She learned to L4L from Professor Carol Gordon at Rutgers University. Dr. Gordon is her Yoda.

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“Teaching video gaming might not be our job, but connecting teachers and students to tools for integrative, authentic assessments is.”

greenfoot

<swww.greenfoot.org>

squeak

<swww.squeak.org>

game maker academy

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GAMING AND CORE CONTENT: Conjoined Twins

Doris Settles
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Over twenty-five years ago my family gathered around our TI-99/4A computer—with all of 16K RAM—playing a text adventure game. Our character was standing on a high cliff above a raging river that ran through an expansive canyon in the American West of the nineteenth century.

"Go back!" yelled my son. My niece, who controlled the keyboard, typed in "go back." The response was terse, immediate, and textual, "A 12-foot boulder blocks the path." "Turn right!" said Mother. Ideas and fingers flew. Time after time we tried every action and direction we could think of, to no avail. That is, until my nephew said what we’d all been thinking, but were too afraid to risk: "JUMP!" This was our final option, so jump we did... landing safely on the opposite bluff.

The Potential

Today's computer game screens bear little resemblance to the black-and-green screens of text adventure games, but the methods they employ are much the same. Story-boarding creates an environment (imagined in text adventures, illustrated in video games) that pulls in the participant much like a good book pulls in its reader. And much like a good historical novel might teach content about a period and its inhabitants, a good instructional video game teaches core content to those playing the game. I had played and observed educational games before, and had not been impressed. The games' main focus seemed to be figuring out a system rather than knowledge creation. I saw gaming as a way to inform, entertain, and stretch the minds of those playing the game. There was great potential here.

Research has shown that we learn best through doing, and gaming technology allows learning to be engaged, activated, and involved in an on-demand environment. Using well-structured games is cost-effective, accessible, and safe for students and the organizations that employ the games to teach.
about one third….We’ve proven to ourselves that technology works. We’ve proven it academically, but more importantly, we’ve proven it operationally” (2001b, 382).

**Integrating Assessment**

I also remember realizing that we assessed our knowledge with every decision we made huddled around our TI-99/4A. Formative assessment occurred every time we entered a command. While the game also made decisions based on our input, as we went along we learned quite a bit about the environment built into the game. The AHA! moment came when the game actually allowed us to jump that canyon safely. We learned that in this environment, risk was less than in our own physical world. That had a huge impact on our future decision making and input for our character.

When we play an educational game, each action provides formative assessment that encourages and directs, but also provides summative assessment of our mastery of the knowledge required to reach higher levels. A game designed with that in mind yields not only a way to create/share knowledge in ways that transfer to a world outside the game’s environment, but also a way to assess mastery learning—not only of core content, but also of the less-tangible and less-easily tested qualities of critical thinking, creativity, problem-solution, risk assessment, and more.

**Bringing the Technology to the Core Content**

Each time I got excited about integrating a new technology into teaching writing to college freshmen, I usually found myself disappointed with the outcomes. Finally, I realized I had been asking the wrong questions.

Ask: “What is it I need my students to learn that the technology could help facilitate?” This is technology at its best, when it becomes wholly integrated into the service of learning. Not “learning first, fun second” as Bob Filipczak said (in jest) in an article in Training (1997), but learning and fun combined into a single experience where each exists for its own sake, each in the service of the other.

As we weave into education the strategies our digital native students use in their day-to-day lives, there are things we need to consider as students collaborate with us and each other to develop instructional technologies. We must:

- identify content/skills that are still relevant
- incorporate content/skills that are newly relevant
- investigate the ways technologies might help master those skills and how they are relevant to today’s environment
- evaluate the technologies on the bases of relevance and mastery of skills, not glitz factor

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*I saw gaming as a way to inform, entertain, and stretch the minds of those playing the game. There was great potential here.*
The Cultural Digital Divide

Technology is not just a subject, tool, or value added in today’s digital society. Today’s digital natives (Prensky 2001a) are born into a world in which they expect to be able create, consume, remix, and share material with the rest of the world—anytime, anywhere, all-the-time, instantly! While many adults are tech-savvy, that does not translate to being digitally literate. We know how to use programs but living our lives isn’t dependent upon this knowledge. We each have a face-to-face life that is enhanced by technology, but our virtual life (each of our lives exists online in some capacity whether we acknowledge it or not) isn’t necessarily enhanced by our face-to-face life. For youth, taking away the electronic connection to their virtual lives effectively brings their face-to-face lives to a screeching halt.

New ways of doing things, especially gaming technology with its addition of a FUN factor in learning, will always have its Luddite detractors. Some will be convinced with solid evidence of success, and some will always feel that learning should be a difficult and onerous task. But it is the mindful attention to blending the technology (fun) with the learning (task) that gives positive outcomes and successful knowledge creation. Marshall McLuhan has been credited with saying, “Anyone who thinks there is a difference between education and entertainment doesn’t know the first thing about either.” I couldn’t agree more.

Doris Settles loves technology. But she also understands the complexities, barriers, and risks that the advent of user-created content have wrought. Author of Understanding i-KIDS (Pelican 2011) and its companion workbook Understanding i-KIDS: A Workbook for Grownups (Pelican 2011), Settles has been recognized by Blackboard and the University of Kentucky as a teacher in the virtual environment, and by the U.S. Department of Justice as a researcher and advocate. She speaks regularly at regional, national, and international conferences. She is a self-avowed “naturalized citizen” in the digital society; through her writing, workshops, and professional development for educators, law enforcement personnel, mental health workers, and social workers, she continues to advocate real and meaningful shifts in how we work with youth to address these issues.

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