



Article

Get in the Game: Developing an Information Literacy Classroom Game

Maura A. Smale
New York City College of Technology, CUNY
Brooklyn, NY

Abstract

Much current research in the field of games-based learning demonstrates that games can be successfully incorporated into educational contexts to increase student engagement, motivation, and learning. Academic librarians are also using games as an innovative instructional strategy to strengthen students' research skills and their understanding of information literacy concepts. This article discusses the development and implementation of Quality Counts, a classroom information literacy game designed to teach undergraduate students how to evaluate Internet sources. After a brief overview of the game's development and rules, the article describes the process of playing Quality Counts in several classes and presents the results of qualitative assessments of student engagement and self-perception of learning, including data from classroom observations and student surveys. Finally, the article offers suggestions for next steps and future research, both for Quality Counts as well as for academic librarians interested in developing or implementing instructional games.

Digital and non-digital games—once referred to as “the original educational technology” (Crawford, 1984, p. 15)—have much to offer information literacy and library instruction. Growing interest in games-based learning is apparent in all educational arenas, from preschool through graduate study. Increasingly, library educators are turning to games to give students opportunities to practice research skills and establish a strong basis for understanding information literacy concepts. This article discusses the development and implementation of *Quality Counts*, a classroom game designed to teach undergraduate students how to evaluate Internet sources. A brief review of the literature is followed by an explanation of the game’s development and rules. I describe the process of playing *Quality Counts* in several classes, including measures used to assess the game, and conclude with suggestions for next steps and further research.

Background

Much solid research from the field of games-based learning provides evidence that games can be effectively incorporated into educational contexts (Shaffer, Squire, Halverson, & Gee, 2005). In his seminal book *What Video Games Have to Teach Us About Learning and Literacy* and other publications, noted games scholar James Paul Gee describes many features of games that enable engagement and learning. These features include an environment that presents problems of increasing complexity, the need to experiment with solutions, and the ability to fail in a low-stakes manner and learn from that failure (Gee, 2005, 2007). When playing games, students “don’t memorize facts, they mobilize information in order to solve game-related problems” (Squire & Jenkins, 2003, p. 14). Games are by their nature collaborative and give students the opportunity both to learn from and teach each other as they work through the rules and progress through the game (Squire & Jenkins, 2003, p. 29). As Kurt Squire from the University of Wisconsin has noted, “the important question is not *can* games be used to support learning, but *how*” (2005, para. 2, emphasis in original).

Using games for instruction is an active learning strategy that encourages student engagement, a feature that may be especially important in library and information literacy instruction (Branston, 2006; Doshi, 2006). While in all settings it can be challenging for instructors to maintain student interest, library instruction presents a number of additional barriers. First, the librarian teaching students usually is not the students’ course professor and thus does not have a preexisting relationship or rapport with them. Library instructors typically do not assign grades to student work produced in information literacy sessions, and students may be much more motivated to complete work that will be evaluated by their professors (Markey et al., 2008, para. 48). Finally, much library instruction occurs in the context of the “one-shot,” a single session during the semester which may appear to students as optional or supplemental, making it difficult to convince students of the relevance of information literacy to their studies.

Games are already attractive to many of our students; and librarians, both academic and others, have embraced games and gaming enthusiastically. There are many examples of information literacy and library instruction games in the published literature (Smale, 2011a; Harris & Rice, 2008) and conference presentations. Academic librarians

have developed short digital games intended for play in a single class session or outside of class (Broussard, 2011; McCabe & Wise, 2009), as well as more involved digital games that are designed for several class sessions or accompany an entire semester-length course (Markey et al., 2010). Librarians have also created non-digital games with readily available materials for use during library instruction sessions. Examples include adaptations of the popular television show *Jeopardy!* (Walker, 2008; Leach & Sugarman, 2006), and pen-and-paper games (Smith, 2007) and scavenger or treasure hunts (Marcus & Beck, 2003). A recent book includes lesson plans for 60 information literacy games, both digital and non-digital, of varying playing lengths (McDevitt, 2011).

Developing a Classroom Game for Evaluating Information

As an avid gamer I have long been interested in educational games; when I was hired in my current position as an information literacy librarian, I began to consider the use of games in library and information literacy instruction. I am an Assistant Professor at New York City College of Technology (City Tech) of the City University of New York (CUNY), the largest urban public university in the United States. City Tech is a commuter college in downtown Brooklyn that enrolls about 15,000 undergraduate students in two- and four-year degree programs in disciplines as varied as Architectural Technology, Nursing and Allied Health, Hospitality Management, Mechanical Engineering Technology, and Entertainment Technology (New York City College of Technology, n.d.).

My involvement in the CUNY Games Network over the past several years has encouraged me to actively experiment with games in library instruction. The CUNY Games Network comprises faculty, graduate students, and staff from many disciplines, departments, and other offices across the 23 schools of CUNY, all interested in using games for teaching and learning. Our website features ideas contributed by our members for games and game mechanics for classroom use, resources for writing and publishing about games and teaching, and information on the theory and practice of games-based learning (CUNY Games Network, n.d.). We meet several times each year to discuss both the games our members have developed and games-based learning in general. At our meetings, we often play a game then discuss its mechanics and brainstorm ways to incorporate those game principles into our teaching. By exploring the mechanics of a game—how gameplay works, what materials and setup are required, how the game is scored, and the conditions for winning—we can more easily identify those elements of games that may be applicable to our own instruction.

One of the guiding principles of the CUNY Games Network is that there are many different ways to incorporate games into educational contexts. When considering the use of games in the classroom, it is easy to envision that implementation will be highly involved, time-consuming, and complex, especially for digital games (de Freitas, 2006, p. 16). However, there are many strategies for incorporating games into teaching that do not require a large investment of time or funds. While CUNY Games Network members do use digital games, members of the group are committed to using all kinds of games in our teaching. Indeed, it is often easier and faster to develop techniques to integrate

components of non-digital games into the classroom: a good strategy for faculty and staff who are beginning to experiment with pedagogical games.

Getting Started: Development Decisions and Learning Objectives

When I began to use games in my own teaching, I started on a small scale. With increasing enrollment at City Tech and a growing information literacy program in our library, it would have been a challenge to find the time to develop a large, complex digital game. I decided on three parameters to guide my development of the game: it must be non-digital, playable in a single class session, and focused on one element of information literacy. My goal was to create a modular, flexible game that could be used by instructors both in the library and in other departments, in sessions that range from the traditional “one-shot” to semester-length courses.

I often hear other faculty lament that their students use inaccurate or mediocre sources in their coursework, so the instructional focus of this game is ACRL Information Literacy Competency Standard 3: “The information literate student evaluates information and its sources critically and incorporates selected information into his or her knowledge base and value system” (Association of College and Research Libraries, 2000). Since students vastly prefer to start their research on the Internet, the game specifically addresses evaluating Internet sources. Most of our students have had uneven exposure to media literacy and information literacy in their pre-college education; evaluating sources, especially Internet sources, is crucial for students’ success in college, their careers, and lifelong learning.

The game I developed is designed to teach college students how to evaluate Internet sources¹. Students search for and critically examine websites, then are awarded points for meeting certain criteria for quality. The game is called *Quality Counts*. After playing the game, students should:

1. Understand the importance of critically evaluating information sources used for their coursework.
2. Identify appropriate criteria for evaluating information sources, including accuracy, expertise, currency, objectivity, and relevance.
3. Evaluate information sources using these appropriate criteria.
4. Recognize that reference librarians can provide assistance with evaluating information and other research questions.²

¹ I offer a brief overview of *Quality Counts* in this article. A detailed lesson plan is available in the edited volume *Let the games begin! Engaging students with field-tested interactive information literacy instruction* (Smale, 2011b).

² This final student learning outcome is a consistent objective for all instructional sessions at the City Tech Library.

Quality Counts: Rules and Gameplay

Only a small amount of preparation is required before playing *Quality Counts* in a class. Before the session, the librarian should decide on a topic for students to use in their search for information sources. It is best to select a topic that is relevant to the course content, preferably in consultation with the course instructor. If possible, the librarian should select a topic that is both newsworthy and a subject of scholarly research, which will increase the likelihood that a wide variety of websites are returned in the search engine results. Examples of relevant topics in 2010 include the digital divide and location-aware devices.

Quality Counts does not require many materials to play. It is best to play the game in a computer classroom or lab with at least enough computers to accommodate each group of students. It is also useful if there is a projector to display the information sources found by students during gameplay. A whiteboard/blackboard or large pad of paper is needed for recording criteria and scores, and each student group needs two index cards on which to write the URLs of the websites it locates. Finally, in my experience it is a good idea to have small prizes for the winning group: possibilities include candy, stickers, or small toys. I have witnessed much more enthusiastic participation from students when prizes are involved. Prizes seem to signify that something game-like—or even fun—is going to happen in class³.

At City Tech our library instruction sessions are typically 75 minutes, so the gameplay described below is tailored to that class length. *Quality Counts* can be modified for class sessions that are longer or shorter by adjusting the size of student groups—the fewer groups playing the game, the less time necessary for the groups to present their websites and receive a score. It is important to pay special attention to the amount of time allotted for student groups to report back to the entire class, which in my experience often easily consumes much of the class period.

A *Quality Counts* session begins with a brief introduction to the gameplay. The librarian explains to students that they will be divided into groups and that each group will search for information on the research topic. All groups search for sources on the same topic, which is written on the whiteboard so it is visible during gameplay. The groups must search the Internet to find two sources that satisfy as many criteria for quality as possible. Each criterion is worth one point, and the group with the highest score after all groups have presented their sources is the winner. Creating two slides that list the gameplay and rules (see Figures 1 and 2) seems to make it easier for students to keep

³ Not all instructors or librarians are comfortable with using prizes in the classroom, and, of course, *Quality Counts* can be played without prizes. While I have not thoroughly explored the role of prizes or the effects of intrinsic versus extrinsic motivation on student participation in classroom games, this is certainly an interesting area for further research.

the instructions in mind. The rules can be displayed on the projector screen for students to refer to while they are searching for sources.

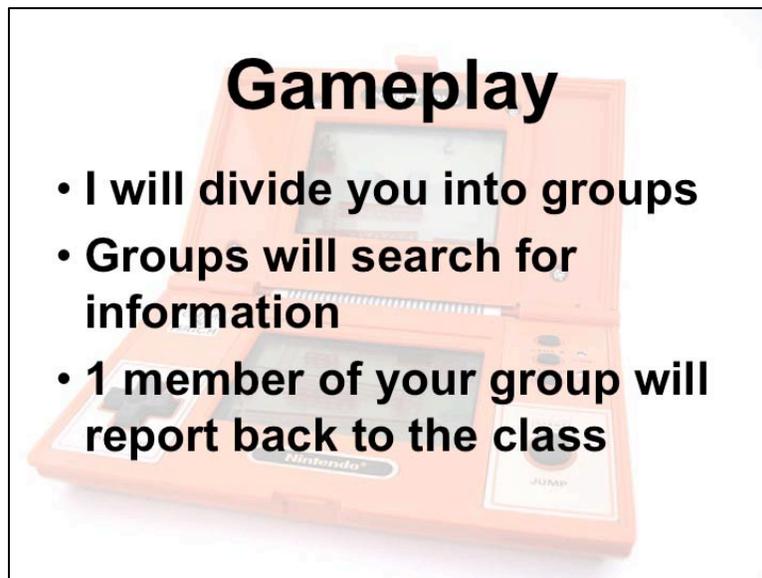


Figure 1. Quality Counts gameplay slide (Background photo, Bijl, 2006. License: <http://creativecommons.org/licenses/by/2.0/deed.en>).

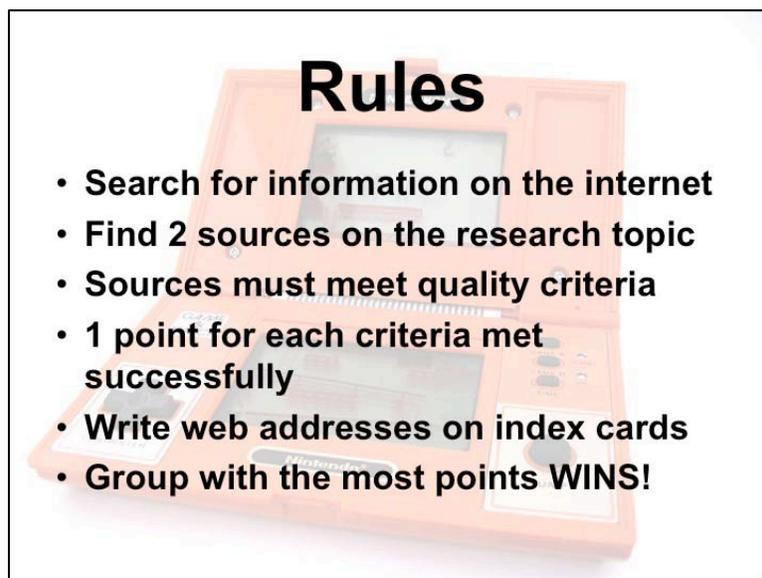


Figure 2. Quality Counts rules slide (Background photo, Bijl, 2006. License: <http://creativecommons.org/licenses/by/2.0/deed.en>).

The students, course instructor, and librarian spend about 10 minutes collaboratively selecting three criteria for source evaluation. Librarians can ask questions to elicit suggestions for criteria to use: for example, inquiring about what attributes of a source they look for to determine quality, and how they know whether they have found a credible source. Usually the criteria students choose include expertise (sometimes expressed as author or publisher), accuracy (sometimes referred to as references or cited sources), and the date of a source (that is, whether it is current). The librarian writes the three criteria on the board for students to refer to during gameplay, making sure to explain the scoring of each criterion thoroughly. For example, students will not be awarded a point simply for finding the author or group responsible for the information on a website; they must also determine whether the author or group is an expert on the topic to gain a point.

After explaining the game, the librarian divides the students into groups, distributes two index cards to each group, and instructs students to write the URL for each Internet source they find on a card. Students then spend 15 minutes searching for and evaluating Internet sources on the research topic. It is helpful for the librarian to circulate through the room while students search, answering questions and keeping them on track. It may also be useful for the librarian to spend time searching for sources on the research topic while students are working (or before the class session) in order to become familiar with the sources that they may select.

After the searching period has ended, the librarian invites a member of each group to report on the websites the group selected and displays those sites on the projector screen as they are discussed. It is important for the librarian to probe students' reasons for selecting the sources they did, asking each group how they determined that the source best fits the evaluation criteria. The librarian leads the students through consideration of each criterion, for example, asking the group how they determined that the website/author is an expert on the topic, or how they know that the information presented on the website is accurate. If the source does not fulfill the evaluation criteria, the librarian and students explore the reasons why the source is not of the highest quality. When all student groups have reported back and the group scores are written on the whiteboard, the librarian tallies up the scores and distributes prizes to the winners.

To wrap up the session, the librarian asks the students if they have any questions and also lets them know that they can come to the Reference Desk with any questions about research, including questions about evaluating Internet sources and websites. It is useful to collect each group's index cards as they leave; the cards can serve as a record of topics and websites discussed in the class.

Playing *Quality Counts* in Class

The previous section describes the way the game was developed and how gameplay was intended to progress. But what *really* happened when playing the game with students in the classroom? I initially piloted *Quality Counts* in a three-credit information lit-

eracy course that I teach at City Tech. I hoped that this would be a valuable opportunity to determine how gameplay could work in the classroom. Due to external constraints we were not able to play a full version of *Quality Counts*, however, playing the game with my class helped me assess the game's timing and allowed me to verify that crowdsourcing the evaluation criteria with students was feasible. I left that class session convinced that I had developed a functioning model for the game.

After using my own course as a testing ground, I ran *Quality Counts* in six English Composition classes (a required course taken by most City Tech students in their first year at the college) from Spring 2010 through Spring 2011. All sections of English Composition visit the library for one class session of information literacy instruction. The *Quality Counts* session occurred after and in addition to the regular library session for these students. In all classes gameplay went well; most students participated willingly in the game and remained engaged during the session. Students understood the directions and the game seemed to be neither too simple nor too complex.

In all six classes the students, instructor, and I agreed on expertise and accuracy as the first two criteria for quality sources (see Figure 3). For the third evaluation criterion, three classes chose currency of publication date (that is, use of recent sources), two classes chose relevance (that is, how well the source covers the topic), and one class chose detail and depth of coverage of the topic. The first time I ran *Quality Counts* in an English Composition class, the students were more reluctant to discuss and develop evaluation criteria with me than my own class had been, which I believe was due to my lack of familiarity with the students. In subsequent classes, I asked the course instructors to contribute during our discussion to choose evaluation criteria; as a result, students were much more forthcoming in their suggestions.

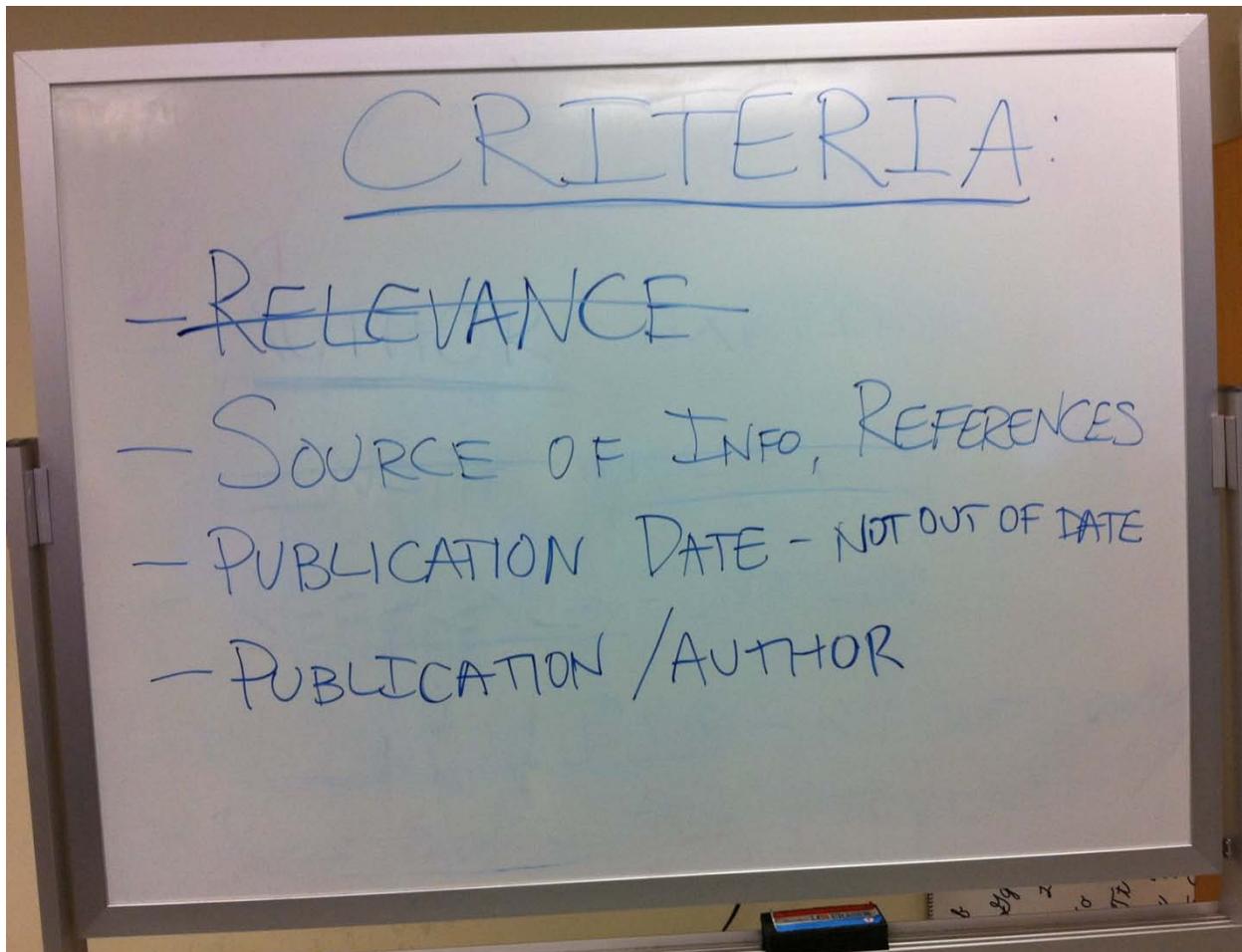


Figure 3. Example of criteria selected during gameplay (“Relevance” is crossed out since this group decided not to use it during the game).

Student groups in all six classes found a wide range of websites while playing *Quality Counts* which made for interesting and lively discussions during scoring. The research topic used in the first class was “location-aware devices” and the sources students selected varied widely in terms of quality. One group found a commercial website that sold GPS devices and incorporated a general description of location-aware devices. Another group retrieved research-based reports about GPS on a corporate website. Examining both of these websites encouraged discussion of the use of research in marketing and for other commercial purposes, as well as on objectivity in general. Intriguingly, a member of one group refused to search for sources on the Internet and convinced the rest of the group that they should use the library databases for their research.

One group found an article on AOL.com—the portal website of the email provider—about the adoption of GPS devices in cars. This group seemed somewhat less engaged with the game and had particular difficulty analyzing the concept of expertise, something I have observed other students struggle with when examining so-called “content farm”

websites such as AOL.com, About.com, Buzzle.com, etc.⁴ Content farms—companies that employ large numbers of writers to create Web articles on many topics in order to increase their search engine ranking and maximize their advertising revenue—have proliferated in recent years, and many of these websites are often returned in the first or second page of Internet search results (Shaver, 2010). Students found that the author had written numerous articles on the site, which they interpreted as evidence of the author’s expertise. But they did not consider the wide range of topics that this author had written about and they were unsure how to explore the website’s purpose more thoroughly.

In the second and third classes that played *Quality Counts*—taught by the same faculty member over two successive semesters—the research topic was “Brooklyn history.” Overall, the students in these classes had an easier time finding quality sources than students in the first class to play the game, likely because Brooklyn history does not have an overtly commercial or consumer facet. Most students in the second and third classes were able to locate appropriate Internet sources: Census.gov, the Brooklyn Historical Society, and a PBS companion website for a documentary on the history of Brooklyn, to name a few. Again, one student group chose to put forth a library source—in this case, a book found while searching the library catalog—rather than an Internet source.

There was an interesting discussion about source dates in the second class to play *Quality Counts*. One group suggested a volume published in the mid-19th century that they had found in Google Books. This “old” book provoked a conversation about primary and secondary sources, and whether older books could be used as research sources not only in history courses but also in an English course. In another group, a student could not find a visible date on a website he selected so he used the Web browser’s options to examine the properties (“Page Info”) of the website and view the last updated date (see Figure 4). Because non-content portions of a website, e.g., advertising and navigation, can change frequently, even daily, his group was misled into thinking that the website content had been updated very recently when it probably had not. This group’s confusion over source dates is an apt illustration of a finding that numerous research studies have revealed: while today’s college students are often highly tech savvy, there is a real difference between facility with technology and true information literacy. This student had the technical skill to use the functions of the browser to find certain kinds of information, but did not compare the date found with the content posted on the website to determine whether they matched.

⁴ There is wide variability in quality even among content farms, e.g., About.com (founded in 1996) has content that is clearly edited, while many of the newer sites like Buzzle.com are much lower in quality. However, the large amount of advertising and lack of source citations on these sites speak to their similar goals, and provides a useful point of discussion with students.

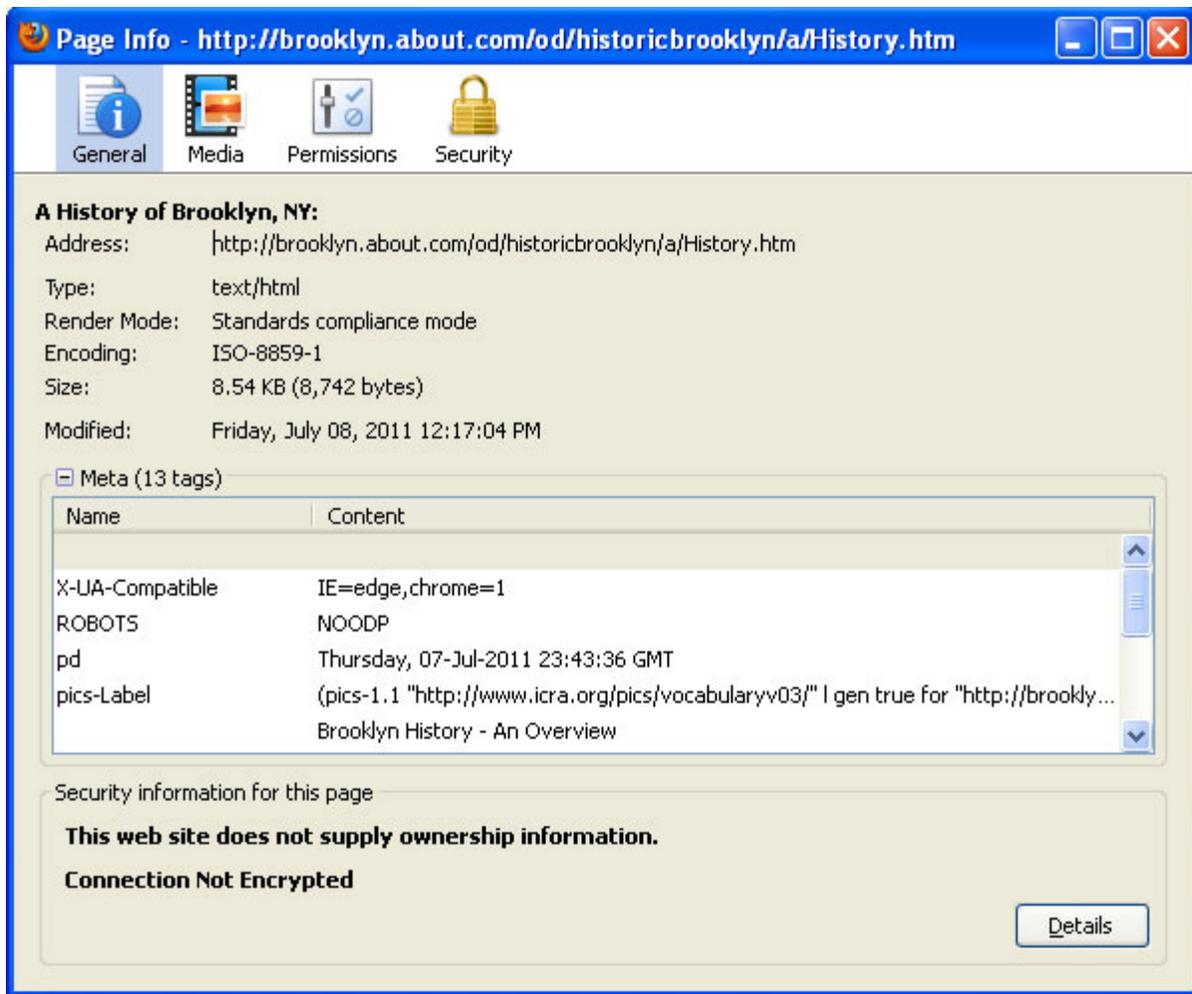


Figure 4. Example of website Page Info window displaying the last modified date.

One student group in the third class put forth a source from a content farm—in this case, About.com. We had time to discuss the site and the idea of content farms more fully in this class, which was very productive. The course instructor joined in and we compared content farms like About.com to Wikipedia, which usually includes references or additional sources in each entry. Our discussion of About.com also included speculation on the reasons for the large amount of advertising on the site.

The fourth, fifth, and sixth classes that played *Quality Counts* were taught by the same faculty member during the same semester using the same research topic: the importance or value of a college education. All of the student groups in these classes relied heavily on journalistic sources, which is to be expected given their research topic, since during economic downturn, the value and cost of a college education is frequently covered by the news media. Students found many relevant and appropriate articles from the *New York Times*, Smartmoney.com, the *Chronicle of Higher Education*, and *US News & World Report*. One effect of the focus on journalism in these classes was the

opportunity to engage students in a discussion of the differences between the conventions that researchers and scholars use when citing sources compared to those that journalists use. Most student groups pointed out the sources referenced by news articles within the body of the text, which the instructor and I reinforced by noting that in an actual research situation students could go back to the original sources to verify the information from the news article.

While not selected by students in these three classes as an evaluation criteria, we also spent time discussing objectivity, especially the fine line between expertise and objectivity as one might find in an opinion piece or on a blog. Again, I attribute this to the research topic used in these classes. Many people, from corporate writers to ordinary individuals, have strong opinions on the value of a college education and share those opinions on the Internet, and some student groups put forth posts or essays from personal websites or blogs. This multiplicity of opinions led to interesting discussions as students considered that when they are researching a topic they must find the balance in a range of opinions in order to address the topic objectively.

These three classes played *Quality Counts* in the spring of 2011, a few months after it was widely reported that Google adjusted its search algorithms to attempt to lower the search engine ranking of many of the largest content farm websites (Miller, 2011). I was somewhat surprised to see that two student groups nevertheless put forth content farm websites during scoring: Ehow.com and Buzzle.com. Perhaps these student groups used a search engine other than Google, one which has not yet attempted to deemphasize content farms in its search results? As with prior classes in which content farm sites were found by students, the instructor and I took this opportunity to discuss the difference between quality and quantity, noting that while content farm authors have often written tens or even hundreds of articles, the topics they cover range so widely that expertise on any particular topic is unlikely. This contrasted well with the reputable news sources students found, like the *New York Times*, in which a reporter writes articles in one specific area of expertise.

As mentioned above, the most intriguing result when playing *Quality Counts* was that one student group in each of two classes insisted on using library resources rather than the Internet, even though the game rules specifically instructed students to find Internet sources. In the first class, discussion during scoring was very animated on this point, and one student accused the group that chose library databases of “cheating” because they did not use the free Internet. This is the first time I have ever heard using the library databases referred to as cheating.

I favor two different interpretations of this behavior. From my experience teaching English Composition library sessions, it is clear that many first-year students do not differentiate between freely-available Internet sources and paid library resources accessed through the library website, especially while they are on campus and do not need to log in to use library databases. It is also possible that these students were trying to “game the game”—while they understood the rules and the difference between library and Internet sources, they chose to use the library anyway because they think library re-

sources are of higher quality than anything they can find on the Internet. I had not expected that students would suggest using the catalog or databases, and it was a pleasant surprise to have the opportunity to include library resources in our discussion during scoring.

Assessing Student Engagement in *Quality Counts*

Two qualitative methods have been used to assess the impact of *Quality Counts* on student engagement and students' perception of their learning during the class session: informal observations and student surveys.

Observations

A critical component of my assessment of student engagement with the game has been recording and analyzing my observations immediately after each class. I also photograph the whiteboards on which the research topics, criteria, and student scores are recorded, and collect the index cards from each student group. These data were extremely valuable as I developed and iterated the game, a process that is often termed playtesting. Playtesting a game, while important to the design of games of all types, may be especially critical when designing educational games to ensure that both gameplay and pedagogical goals are met (Winn & Heeter, 2006).

Playtesting *Quality Counts* has been most useful for working out the rules and process of gameplay. When I initially developed the game it was difficult to anticipate the amount of time students would need to search for sources as well as the time groups would spend presenting their sources to the class. Multiple iterations of gameplay have shown that students are usually able to find one or two sources on a research topic within 10 or 15 minutes, while at least 10 minutes per group is required for students to report back and receive a score. It can be tempting to allot more time for students to search, as they sometimes request, because discussions about quality during the process of source selection are often a great learning experience. However, the discussion with the entire class that the scoring process incorporates is also a valuable learning opportunity that augments student group work, so it is advisable to allow as much time for scoring as possible.

One feature of *Quality Counts* that remains unclear to me is how best to use the index cards on which students write the URLs of the websites they have researched during gameplay. I originally conceived of the game as incorporating some of the game principles of poker: students would sit in a circle, write their sources on the cards, hold their cards up to keep them hidden from the other groups, then reveal their sources during scoring. I hoped that this reveal moment would make play more fun and game-like, but once I got into the classroom it was apparent that using this mechanic was untenable. Most of the computer classrooms at City Tech feature fixed seating in rows, so it is usually not possible for students to sit in groups around a circle. It is possible that *Quality Counts* could be more like poker if it were played in a room with one large or several

small tables and laptop computers, or perhaps the hold and reveal mechanic that poker and other card games employ is simply not a useful component of this game.

An unexpected stumbling block encountered during scoring in *Quality Counts* involved uncertainty about the quality of some of the websites that students found. As mentioned above, one group found an article about cars with GPS on the AOL website. While the information was essentially accurate and current, expertise was definitely lacking. In these situations I awarded a half point rather than a full point, but offering partial credit is less straightforward and can make scoring somewhat confusing. While this gray area is certainly representative of what students will encounter in their own research for their assignments, it is less than ideal from the perspective of gameplay. Perhaps scoring on a scale or using a spreadsheet will help address this issue. I am still not sure how to resolve this in the future without adding unwanted complexity to the game, but will continue to probe this issue as I play the game with additional classes.

Student surveys

I asked students who played *Quality Counts* in the six English composition classes to fill out a short form to gather their evaluations of the game and their perceptions of the impact of playing the game on their ability to evaluate Internet sources (see Appendix 1). Since I am studying the effectiveness of games-based learning with students, this project falls within the category of human subjects research, and I have obtained the required approval for the project by the Institutional Review Board at City Tech. I returned to each class a few weeks after playing *Quality Counts* so that students could sign consent forms and fill out surveys. Seventy-six students from all six classes have completed surveys.

The majority of students claims to have enjoyed playing *Quality Counts* in class (see Figure 5) and cites a variety of reasons. Some mention enjoying the competition and the opportunity for hands-on work, while one student claims that the game is “a very interactive and fun way to learn how to do research online.” Several students note that they learned something useful, and one said she liked the game “because I won candy.” Of those who respond negatively to this question, one student claims “I mostly know all that stuff” and two students answered no, they did not like playing the game because “it was boring.”

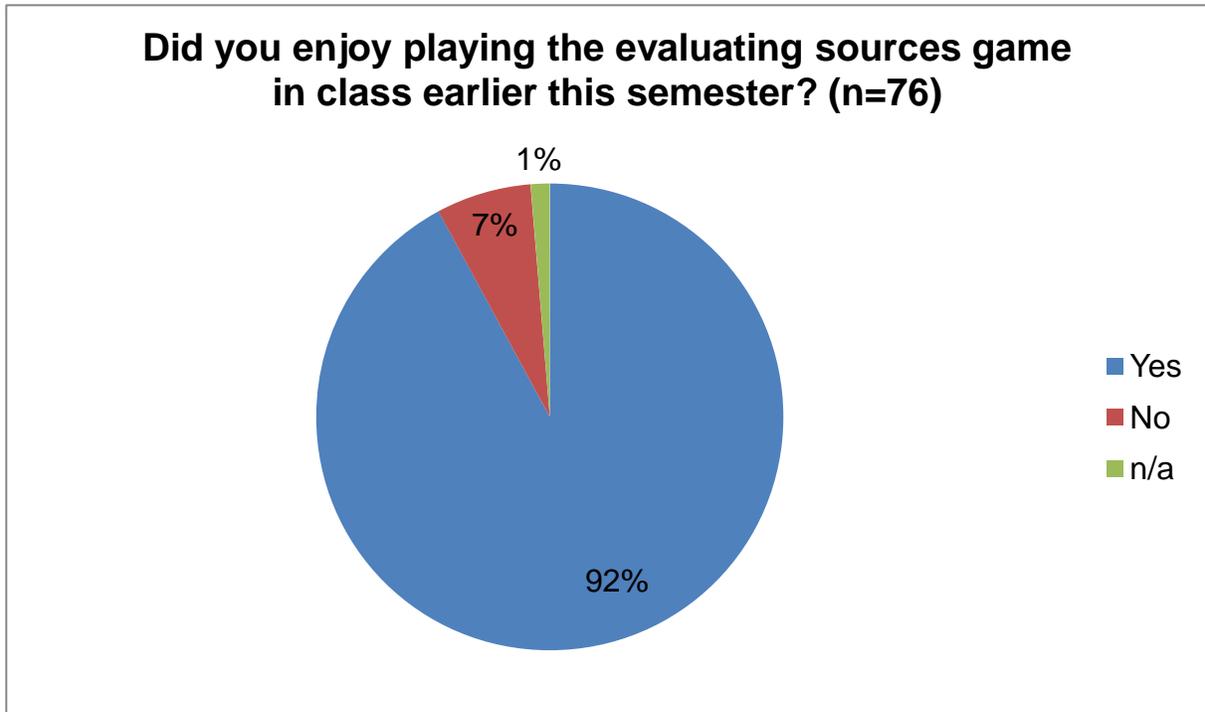


Figure 5. Student enjoyment of the game.

Most students who played *Quality Counts* agreed that they gained skill in website evaluation while playing the game in their class (see Figure 6). The most common benefit noted by students is knowledge of criteria to use for evaluation, and one student mentioned preferring to use library sources rather than “any kind of source.” It is especially gratifying to read one student comment that “even though my website of choice seemed to be a great source, it did not have much solid info.” However, not all students believe that they became more skilled in evaluation after playing the game. A minority of students mention that they knew how to evaluate sources before playing the game, either because they consider this skill to be common knowledge or because “in high school it was taught already many times.”⁵

⁵ This is a common situation in all of our English composition library sessions, as students arrive at City Tech having had widely varying experience with information literacy. Unfortunately, a thorough assessment of prior learning in order to tailor the game to each student’s knowledge is not possible within the time constraints of this instructional setting.

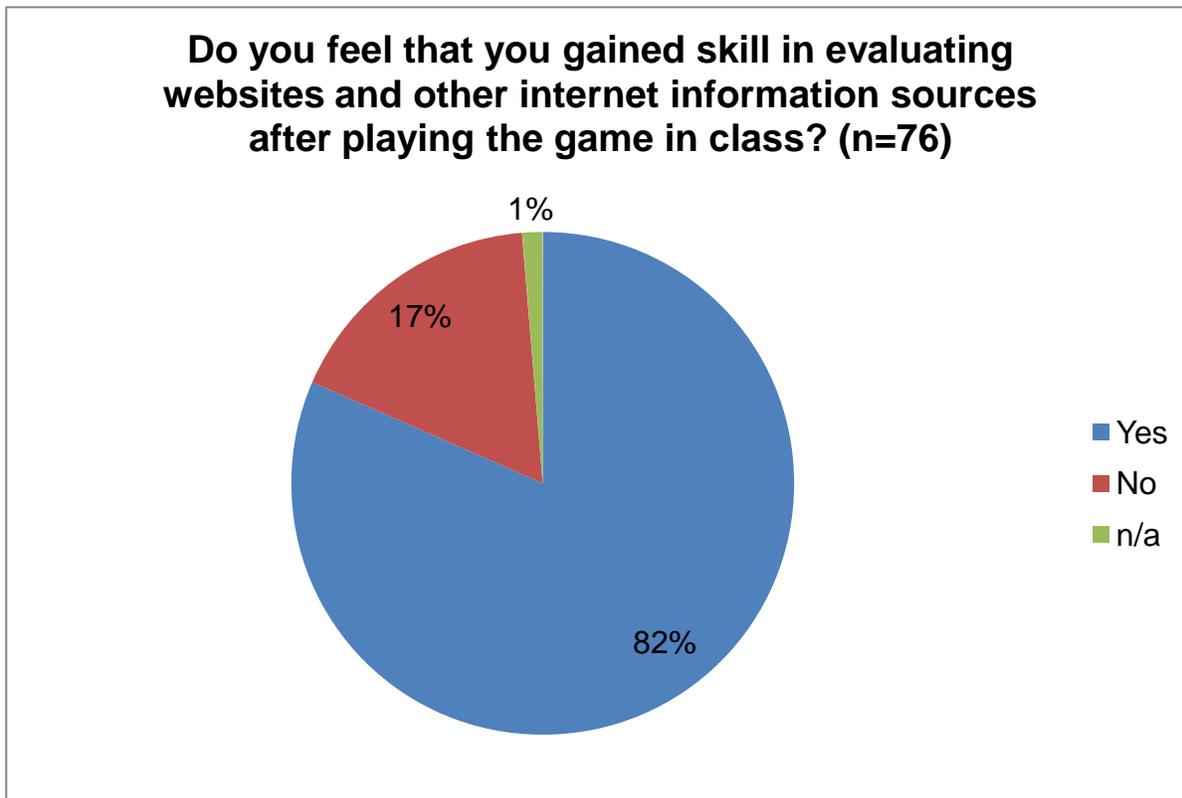


Figure 6. Student self-report of skill gain.

When asked if they had ever played a game in any of their other college classes, only five students answered in the affirmative. Unfortunately, only one of these students elaborated on the type of game or subject matter of the course in which she or he had played a game: a game of *Jeopardy!* in a biology class. In the future the survey will be modified to include a follow-up question inviting students to describe the kinds of games that they have played in their other courses.

Student responses were more mixed when asked whether they prefer traditional classroom instruction or using a game in class (see Figure 7). Consistent with the answers discussed above (see Figure 5), a majority of students claim to prefer the game. Students note that playing the game is more interactive and fun than a traditional lesson, and that they enjoy the competition and ability to work in groups. Twelve students indicate that they prefer a more traditional lesson; for those who chose to elaborate, responses suggest that these students feel that they learn more effectively in a traditional classroom setting, while one student mentioned that the game “seemed to reiterate the high school mentality.” Interestingly, nine students specify that they prefer a mixture of traditional and games-based instruction, noting that “one can enhance the other.” Those students also mention enjoying a variety of instructional approaches and one even suggested that “maybe review can be a game.”

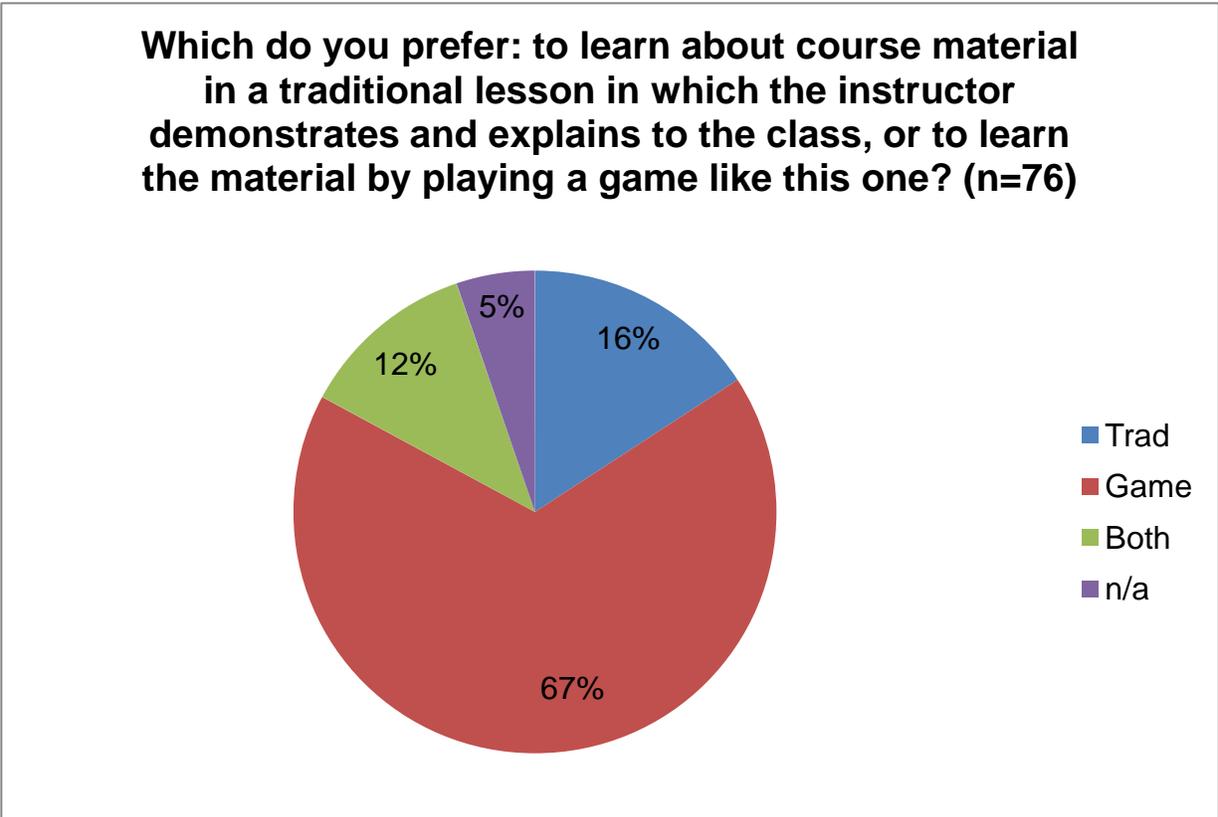


Figure 7. Student opinion of gaming versus traditional instruction.

Conclusions and Next Steps

While I certainly enjoy using games in library instruction, in part because I enjoy playing games myself, most satisfying to me is the apparent increase in student engagement and self-perception of competency that I have experienced while playing *Quality Counts* with students. I am also pleased with the many spontaneous teachable moments that occur during gameplay as we discuss and score students' information sources. It is true that I could design a traditional lesson in evaluating information that covers Internet vs. library resources, content farms, objectivity vs. bias, and finding the original source of a piece of information, among other topics. However, the ability to discuss these issues organically as they arise when students search for information during gameplay produces a much more realistic and, I believe, meaningful, learning experience for students.

I plan to continue playing *Quality Counts* with students in the future, both in the library's information literacy course and in other courses at City Tech. I continue to run the game in several English Composition classes each semester, and am beginning to reach out to additional faculty members to pilot the game in courses offered in other departments. Feedback from English Composition faculty has been positive; instructors have noted both that their students seem to have enjoyed playing the game and that they to have learned about evaluating sources during the session. A colleague has also run the

game in several library instruction sessions and the information literacy course that she has taught, and reported that students seem to enjoy participating in the game.

Now that I have completed *Quality Counts*, I will “release” it to faculty in departments across the college for use in their classes. I am at a small library in a large institution: it is not feasible for our librarians to offer in-person information literacy instruction for every course at the college. To this end I have begun to offer a workshop for faculty to discuss *Quality Counts* and other strategies they may wish to use to strengthen their students’ competencies in evaluating information sources obtained from the Internet and elsewhere.

As noted above, to date my assessment of *Quality Counts* has focused on student engagement in the library classroom and students’ self-perception of their competency with evaluating Internet sources. Both qualitative measures used – observation and questionnaires – suggest an increase in student engagement with the library session, and most students self-report gaining skill in source evaluation since playing the game. I have not yet assessed student learning gains (with either qualitative or quantitative measures), and it would be an interesting avenue for future research to compare student learning in library sessions using *Quality Counts* with that in a traditional library lesson on Internet source evaluation.

I strongly encourage instruction librarians who are interested in using games for teaching information literacy to take the plunge. As others have also suggested, it is fine to start small, perhaps by adapting a non-digital game strategy or mechanic in a single class or instruction session (Waelchli, 2008, p. 223). Consider incorporating a principle from games-based learning into your own teaching: don’t be afraid of failure (Waelchli, 2008, p. 223), and look for ways to fail forward and learn from unsuccessful features while continuing to develop and iterate your games.

Many librarians and other instructors may be reluctant to use a game in class, especially those who do not play games themselves. For those librarians who are interested in using games as an additional instructional strategy, a non-digital game like *Quality Counts*, with minimal class preparation time, can be a great starting point. There is no special equipment required for gameplay and the game is short enough to play in one class session. In my experience, just uttering the word “game” seems to add levity and fun to a session, and increases student engagement with the material covered in the class. Students participate enthusiastically in the gameplay and leave the session with a greater understanding of the necessity of evaluating information sources for their coursework.

Appendix 1: *Quality Counts* Student Survey

English Composition I Evaluating Sources Game

A few weeks ago a librarian came to your class to talk about finding credible information on the Internet. You played a game in which the class was divided into groups and each group was asked to find 2 quality sources on the Internet. Each group's sources were presented to the class, and each group received points for finding a credible source; the group with the most points was the winner.

This survey will help the library assess the value of this game and help us make improvements for future classes. Thank you in advance for your feedback.

1. Did you enjoy playing the evaluating sources game in class earlier this semester? Why or why not?
2. Do you feel that you gained skill in evaluating websites and other Internet information sources after playing the game in class? Why or why not?
3. After the class, did you have any questions about evaluating sources that were not answered? If so, what are they?
4. What was the most valuable thing you learned during the evaluating sources game?
5. Before this class, had you ever played a game in one of your college courses?
6. Which would you prefer: to learn about course material in a traditional lesson in which the instructor demonstrates and explains to the class, or to learn the material by playing a game like this one? Why?

Thank you!

References

- Association of College and Research Libraries. (2000). *Information Literacy Competency Standards for Higher Education*. Retrieved July 30, 2011, from <http://www.ala.org/ala/mgrps/divs/acrl/standards/informationliteracycompetency.cfm#stan>
- Bijl, F. (2006). *Game & Watch: Donkey Kong* [Photograph]. Retrieved from <http://www.flickr.com/photos/frenkieb/211797048/>.
- Branston, C. (2006). From game studies to bibliographic gaming: Libraries tap into the video game culture. *Bulletin of the American Society for Information Science & Technology*, 32(4), 24-26. Retrieved from <http://www.asis.org/Bulletin/>
- Broussard, M. J. S. (2011). Goblin Threat. In T. R. McDevitt (Ed.), *Let the games begin! Engaging students with field-tested interactive information literacy instruction* (pp.132-133). New York: Neal-Schuman Publishers, Inc.
- Crawford, C. (1984). *The art of computer game design*. Berkeley, Calif.: Osborne/McGraw-Hill.
- CUNY Games Network. (n.d.). Retrieved July 30, 2011, from <http://games.common.gc.cuny.edu/>
- de Freitas, S. (2006). *Learning in immersive worlds: a review of game-based learning*. Retrieved from http://www.jisc.ac.uk/media/documents/programmes/elearninginnovation/gamingreport_v3.pdf
- Doshi, A. (2006). How gaming could improve information literacy. *Computers in Libraries*, 26(5), 14-17. Retrieved from <http://www.infotoday.com/cilmag/>
- Gee, J. P. (2005). Good video games and good learning. *Phi Kappa Phi Forum*, 85(2), 33-37. Retrieved from http://www.phikappaphi.org/web/Publications/PKP_Forum.html
- Gee, J. P. (2007). *What video games have to teach us about learning and literacy* (Rev. and updated ed.). New York: Palgrave Macmillan.
- Harris, A., & Rice, S. E. (Eds.). (2008). *Gaming in academic libraries : collections, marketing, and information literacy*. Chicago: Association of College and Research Libraries.
- Leach, G. J., & Sugarman, T. S. (2005). Play to win! Using games in library instruction to enhance student learning. *Research Strategies*, 20, 191-203. doi:10.1016/j.resstr.2006.05.002

- Marcus, S., & Beck, S. (2003). A library adventure: Comparing a treasure hunt with a traditional freshman orientation tour. *College & Research Libraries*, 64, 23-44. Retrieved from <http://crl.acrl.org/>
- Markey, K., Swanson, F., Jenkins, A., Jennings, B. J., St. Jean, B., Rosenberg, V., Xingxing Yao, et al. (2008). The effectiveness of a web-based board game for teaching undergraduate students information literacy concepts and skills. *D-Lib Magazine*, 14(9/10). doi:10.1045/september2008-markey
- Markey, K., Swanson, F., Leeder, C., Peters Jr., G. R., Jennings, B. J., St. Jean, B., Rosenberg, V., et al. (2010). The benefits of integrating an information literacy skills game into academic coursework: A preliminary evaluation. *D-Lib Magazine*, 16(7/8). doi:10.1045/july2010-markey
- McCabe, J., & Wise, S. (2009). It's all fun and games until someone learns something: Assessing the learning outcomes of two educational games. *Evidence Based Library & Information Practice*, 4(4), 6-23. Retrieved from <http://ejournals.library.ualberta.ca/index.php/EBLIP>
- McDevitt, T. R. (Ed.). (2011). *Let the games begin! Engaging students with interactive information literacy instruction*. New York: Neal-Schuman Publishers.
- Miller, C. C. (2011, February 25). New Google search system seeks to weed out useless results. *The New York Times*. Retrieved from <https://www.nytimes.com/2011/02/26/technology/internet/26google.html>
- New York City College of Technology. (n.d.). *About Us - Facts and policies*. Retrieved July 30, 2011, from <http://www.citytech.cuny.edu/aboutus/collegefacts.shtml>
- Shaffer, D. W., Squire, K. R., Halverson, R., & Gee, J. P. (2005). Video games and the future of learning. *Phi Delta Kappan*, 87(2), 105-111. Retrieved from <http://www.kappanmagazine.org/>
- Shaver, D. (2010). *Your Guide to Next Generation "Content Farms."* Retrieved July 30, 2011, from <http://www.pbs.org/mediashift/2010/07/your-guide-to-next-generation-content-farms200.html>
- Smale, M. A. (2011a). Learning through quests and contests: Games in information literacy instruction. *Journal of Library Innovation*, 2(2), 36-55. Retrieved from <http://www.libraryinnovation.org/>
- Smale, M. A. (2011b). Quality Counts: Evaluating internet sources. In T. R. McDevitt (Ed.), *Let the games begin! Engaging students with field-tested interactive information literacy instruction* (pp. 96-98). New York: Neal-Schuman Publishers, Inc.

Smith, F. A. (2007). Games for teaching information literacy skills. *Library Philosophy & Practice*, 9(2), 1-12. Retrieved from <http://www.webpages.uidaho.edu/~mbolin/lpp.htm>

Squire, K. (2005). Changing the game: what happens when video games enter the classroom? *Innovate: Journal of Online Education*, 1(6). Retrieved from <http://www.innovateonline.info/>

Squire, K., & Jenkins, H. (2003). Harnessing the power of games in education. *InSight*, 3 (1), 5-33.

Waelchli, P. (2008). Leveling up: Increasing information literacy through videogame strategies. In A. Harris & S. E. Rice (Eds.), *Gaming in academic libraries: Collections, marketing and information literacy* (pp. 212-228). Chicago: Association of College and Research Libraries.

Walker, B. E. (2008). This is Jeopardy! An exciting approach to learning in library instruction. *Reference Services Review*, 36, 381-388. Retrieved from <http://www.emeraldinsight.com/products/journals/journals.htm?id=rsr>

Winn, B., & Heeter, C. (2006). Resolving conflicts in educational game design through playtesting. *Innovate: Journal of Online Education*, 3(2). Retrieved from <http://innovateonline.info/>

Maura A. Smale is Assistant Professor, Information Literacy Librarian at New York City College of Technology, CUNY. Email: msmale@citytech.cuny.edu

©2012, M. Smale. *Journal of Library Innovation* is an open access journal. Authors retain the copyright to their work under the terms of the following Creative Commons license: Attribution-Noncommercial-No Derivative Works 3.0 (United States) <http://creativecommons.org/licenses/by-nc-nd/3.0/us/>