

BIBLIOBOUTS: A SCALABLE ONLINE SOCIAL GAME FOR THE DEVELOPMENT OF ACADEMIC RESEARCH SKILLS

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ABSTRACT

A research and development team is designing, developing, and evaluating the BiblioBouts game that gives undergraduate students opportunities to learn and practice information literacy skills using online library research tools and library collections while they work on their assignments. This paper explores the game's potential to scale from a handful to thousands of students. Overall, we hope to demonstrate that online social gaming is an innovative instructional technology that can be used to support bibliographic instruction and academic research skills development in undergraduate classrooms.

THE PROBLEM

Information literacy programs have ambitious goals; however, only a minority of institutions feature first-year experience programs where information literacy content is mandatory (Boff & Johnson, 2002). Librarians fight an uphill battle, trying to reach as many students as they can through a wide range of venues such as workshops, short courses, virtual reference assistance, web-based instruction pages, and walk-in assistance at information desks.

WHY GAMES?

Social gaming reinforces principles of good learning, including getting results by trial and error, self-discovery,

following hunches and reinforcement through repetition (Gee, 2007; Johnson, 2005; Prensky, 2007). BiblioBouts incorporates collaborative problem solving, learning by doing, and participating in community learning environments. Gaming has the potential to scale from one student to thousands, but as of today its promise as a method of teaching incoming students information literacy skills is largely untapped.

THIS PAPER'S PURPOSE

The purpose of this paper is to assess how BiblioBouts can scale from a handful to many thousands of students and what support system is necessary to ensure success.

BIBLIOBOUTS PROJECT OBJECTIVES

The BiblioBouts Project explores how games can be utilized to achieve information literacy goals. Playing BiblioBouts gives students practice using library research tools while they do their assignment and enables them to leverage their research efforts finding readings, assessing their usefulness and choosing the best readings with their classmates' efforts so that everyone benefits. The project will yield open-source game software that libraries can use immediately to enhance their information literacy programs. The project will also yield best practices to aid in the design, development, and deployment of future information literacy games.

GAME OVERVIEW

BiblioBouts is a collection of mini-games or "bouts" which demonstrate to students that research is not a singular skill, but a set of discrete skills that are interrelated and repeatable. Each bout defines a specific subset of skills within a much larger research skill-set, helping students structure their

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Table 1: The Bouts of Bibliobouts

Bout	Suggested duration	Description	Information literacy skills, concepts, & tools
Donor	2 weeks (concurrent with Closer mini-game)	Students search the web & scholarly databases for relevant sources (i.e., citations and full texts) and save them in Zotero	Searching scholarly databases. Assessing relevance. Distinguishing citations from full texts. Using Zotero to save sources.
Closer	2 weeks (concurrent with Donor mini-game)	Players choose their best sources, make sure full texts are attached, & submit them to BiblioBouts	Assessing relevance. Correcting citations. Finding full texts in e-journal collections. Using Zotero to save sources.
Rating & Tagging	2 weeks	Players tag sources' content, discipline, format, audience, & rate their relevance & credibility	Understanding aboutness, disciplinary, format, audience. Assessing relevance & credibility.
Sorter	4 days to 1 week	Players sort their opponents' sources into narrower categories named for themes their papers are likely to cover	Becoming increasingly familiar with source content. Organizing sources by topic and subtopic in preparation for outlining and writing papers.
Best Bibliography	4 days to 1 week	Players choose the best sources that address a specific research question	Using aboutness, disciplinary, audience, relevance, & credibility to choose the best sources. Compiling an annotated bibliography linked to full texts.

research process. The game gives students feedback regarding their strengths and weaknesses. It also gives them repeated opportunities for practice and reinforcement so they retain and add what they learn to their daily work habits.

Table 1 describes the game's bouts and duration, and summarizes the information literacy skills, concepts, and tools students encounter during game play. Click on bout names, or see end of article, to link to a video showing game play.

DEPLOYMENT EXPERIENCES

In the 2009–2010 academic year, approximately 350 students at four institutions (Saginaw Valley State University (SVSU), Troy University Montgomery Campus, University of Baltimore, and University of Michigan) played BiblioBouts and evaluated the game through pre- and post-game questionnaires, focused-group interviews (FGIs), and game-play diaries. With the assistance of the R&D team and/or partner librarians at these institutions, instructors used BiblioBouts' administrative interface to create a BiblioBouts game on a broad-based topic of their choosing for the students in their class and monitored student participation as a whole and individually.

GAME-PLAY INCENTIVES

The R&D team's recognition of the importance of game-play incentives comes from its evaluation of The Defense of Hidgeon, a web-based board game the team designed, developed, and deployed in a class of 75 undergraduate students in 2007 (Markey et al., 2008, 41). In the absence of incentives, only 6 students played Hidgeon. It was only after the instructor offered extra credit that two-thirds of the students made an effort to play and one-third successfully met game-play quotas and

minimum scoring requirements that earned them extra credit. To avoid a repeat with BiblioBouts, the R&D team strongly encouraged instructors to incorporate the game into their syllabuses and require students to play it. Instructors responded in one of three ways: (1) they gave students who met game-play quotas extra credit and \$20 from the project budget for finishing in the top 20, (2) they required students to play the game and graded them based on their game-play performance, or (3) they let students choose—play BiblioBouts in place of a different assignment. FGI questions probed students about incentives that were the impetus for their game play. Students said that grades, extra credit, and prizes were important motivators:

Student: Grades and assignments were a big incentive, a huge incentive.

Student: And the fact that [playing the game] is part of the class.

Student: Money.

Student: Yeah because our biggest incentive is ... the grade boost and in order to get the grade boost you have to be in our top 20. In order to be in our top 20 you've got to do what everyone else is doing in the game to get the same amount of points or higher.

Student: Extra credit was the biggest incentive why I did this.

Student: The biggest motivation for staying in the game was probably the extra credit ... A lot of times people will put in more effort if they know their grade's on the line versus if they're getting paid for a study.

Post-game questionnaires asked students to choose the *one* factor that changed the most between the start and finish of the game from this list: their motivation, interest, desire to win, desire to receive the highest grade, desire to have fun, desire to learn something about library research, or perseverance playing the game. Chosen by 60% of students were “my desire to win” (42%) and “my perseverance playing the game” (18%).

Especially in FGIs students commented on how playing a game sparked their competitive nature:

Student: I’m competitive so I was just playing for ... because I wanted to win. I didn’t care if I was going to get an F on it. I wanted to win.

Student: I was number 1 for a little bit. It was great. I was so excited. My friend was so jealous.

Student: I was number 1 for a little bit too. I was the first one that rated all 105 documents.

Student: Because I had a friend that I was like competing with. I’d be like, “Oh, I’m one up on you now.” Like she ended up above me though.

Surprising to the R&D team was students’ desire to contribute in a positive way to the research project:

Student: It was interesting to play. To be involved in the experiment. The testing. It helped you with the research. We knew it was benefiting you and it was benefiting us because we would get a better grade. And money. So why not play?

Student: I think maybe the reason that I have so many suggestions about how to improve it is that I really value the game and—I really enjoy the process and I find it very helpful.

LIBRARIAN INVOLVEMENT

Because incoming students rely so heavily on Google, Wikipedia, and the web (Fast & Campbell, 2004; Head, 2007; Griffiths & Brophy, 2007), the R&D team required instructors to invite librarians to their classes to demonstrate the library’s portal to scholarly information and one or more databases that were likely to yield relevant citations and full texts for the broad-based topics in play.

In FGIs, students acknowledged the importance of the librarians in the research process:

Student: I think the biggest help was when the librarian came in and showed us ... how to use the different databases because I think that there is just so many that I wasn’t really sure [where] to go. I mean ProQuest was the main one that I used at first because it was just so general but she showed us this specific like business type websites that we could go to. And I liked that.

Student: I wasn’t aware of any of those business databases [the librarian showed us] because I am not a business student. So for those to be introduced to me, it was very helpful for this topic specifically.

Student: [The librarian] did a good job showing the searching because she showed a couple of people who didn’t know how to put stuff in quotations or the other HTML-type things you can do in a search bar to filter results.

SHARING RESPONSIBILITIES BETWEEN LIBRARIANS AND INSTRUCTORS

In FGIs, students acknowledged their lack of familiarity with certain information literacy concepts and skills that they encountered during game play. The R&D team have addressed some of their concerns such as adding definitions for unfamiliar terms, e.g., trustworthiness, scholarliness, and relevance, by adding pop-ups that display these definitions. Other concerns can only be addressed by librarians and/or instructors leading class discussions during game play. The game’s Instructor FAQ (<http://bibliobouts.si.umich.edu/InstructorFAQ.html#C>) describes several themes for discussions and the bouts when these discussions should take place. Examples are:

- Suggesting library databases and keywords (during Donor and Closer bouts)
- Distinguishing between abstracts and full texts (during Donor and Closer bouts)
- Performing a technical reading of a source (especially during Rating & Tagging bout)
- Finding clues that reveal whether the author is an expert in the field (during Rating & Tagging bout)
- Distinguishing research and theory in a discipline from opinion, anecdotes, second-hand reports of research, news reports, and the like (during any bout)

Discussions could range from five minutes or less (giving students database and keyword suggestions) to a half hour or more (helping students distinguish between surface-level and scholarly information). When instructors talk about the game in class and give students feedback on the information they have found, students take notice and are likely to take the game seriously, giving it their attention and perseverance, and engaging in metacognitive activities pertaining to the library research process.

DISCUSSION

BiblioBouts gives students exposure to and practice in the research process on a topic assigned in class. Game play culminates in an actual bibliography to be used to write a specific paper. The game ushers students through the research process one major step at a time by: (1) introducing them to online research and discovery tools and putting citation management

tools at their fingertips so they can manage the information they find, (2) asking them critical questions about the relevance and credibility of the information they find, (3) tasking them with the identification of the major themes that emerge from an analysis of collected information in preparation for writing their paper's outline, and (4) requiring them to choose the best information for a particular topic. BiblioBouts puts them in situations when they must do information literacy tasks repeatedly and as a result they gain valuable practice. Students told us how they benefited from game play:

Student: [Playing BiblioBouts] reinforced my ability to determine what a good source was and it had me looking more in depth at what would be considered a proper source in terms of who is writing it. I think I still would use ... news sources and that sort of thing but I guess in the future I'd be more wary and try to mainly use primary sources ... for my paper or ... better rated sites.

Student: I think anything is more fun in a game setting. Everyone loves games.

Student: [Playing BiblioBouts] reinforced how I would go through my research and make it more methodical ... It solidified my methods of doing research, it solidified the approach of doing research and it also would give me a platform tailored to those methods. Why shouldn't you have a system that teaches you those methods and to go through? There's no reason not to. It only makes sense.

Student: I think it helped us to read the articles. Like when I was sorting I read through, especially like rating, tagging, and sorting, I had to read through and it helped me find the articles that I used for my paper and ... that helped.

Student: It made me feel more confident in the research I'll do in the future.

Game play cannot stand on its own. To encourage students to play the game, faculty must add incentives—incorporating the game into their syllabuses, integrating game play into course assignments, grading students on their game-play performance, and/or giving them extra credit for their participation. Faculty who want to share their involvement with librarians will find them enthusiastic and able partners. Librarians can create games, demonstrate library portals and relevant databases to students, and facilitate class discussions on the information literacy concepts, skills, and tasks students encounter on a bout-by-bout basis.

Ultimately, the impetus to improve students' information literacy skills must come from the faculty themselves, realizing that in the absence of information literacy instruction, their research assignments perpetuate students' habitual patterns of searching Google, Wikipedia, and the web. By implementing BiblioBouts within the context of their classes, faculty can take

a series of systematic steps to break these patterns and replace them with new, more fruitful pathways to information seeking. BiblioBouts can become a turnkey solution for a single professor with a single assignment, or for an entire program looking to expand their curriculum. The BiblioBouts game can scale, reaching from a handful to thousands of students; however, faculty involvement and game-play incentives are required for students to take the game seriously.

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AUTHOR NOTE

* Markey and Leeder were Presenters for this article at LOEX

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BOUT VIDEO LINKS

http://www.bibliobouts.org/documentation/donor_demo.html

http://www.bibliobouts.org/documentation/closer_demo.html

http://www.bibliobouts.org/documentation/rating_tagging_demo.html

http://www.bibliobouts.org/documentation/sorter_demo.html

http://www.bibliobouts.org/documentation/best_bib_demo.html

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