Creating a Customizable Alternate Reality Game Toolkit for Academic Libraries

Scott Nicholson, Syracuse University
Angela Ramnarine-Rieks, Syracuse University
Alexandra Heidler, Syracuse University
Sarah Bratt, Syracuse University

Abstract: This article documents the process of creating and testing a prototype of a customizable Alternate Reality Game (ARG) toolkit for academic libraries. The goal of the project was to create an information literacy game toolkit for academic libraries that was more engaging and relevant to users than a traditional fact-based scavenger hunt. The researchers started with a Delphi study with librarians to develop a set of functional and technical requirements and then developed a story and prototype to meet those requirements. They then performed limited testing of the prototype and documented lessons learned about making games for libraries.

Introduction

Academic libraries are challenged to provide services to users who do not always perceive the value of library resources (Kolowich, 2011). The growth of open-source journals and online repositories enables increased access to a growing subset of quality peer-reviewed academic articles without the need for a library. The "that's good enough" mindset many users harbor toward academic research reduces the desire to go to a physical library or access resources through an academic library portal. One way the library can address this concern is by providing stronger information literacy education available on demand to bolster user appreciation of the value of library resources not available on the free web.

A recurrent problem with information literacy education is that it is often presented without context or connection to immediate student needs. Therefore, most students are not engaged in this just-in-case educational approach to library services. For library games to be successful they must be relevant to the students' needs (Markey, Leeder, and Rieh, 2014). Their approach was to create a game that helped a student analyze sources; in order to make the game meaningful, the student played the game while working on a classroom assignment.

We envisioned creating a game relevant to students by encouraging librarians to customize the game around a locally relevant controversial issue such as fracking. This focus would preserve relevancy to the students' needs without the requirement to be tied to a classroom assignment schedules. The librarian customizing the game would also use resources and services specific to that library to address the challenge of helping users realize the value of local resources that can be found through the library's physical space or authenticated gateway. We conceptualized this project as a toolkit for librarians to create a customizable game.

A grant proposal to the Institute of Museum and Library Services (IMLS) in partnership with the Education Arcade at MIT was funded to develop a prototype based upon technical and functional requirements set by academic libraries. We were then to develop the narrative and create a functional prototype. This article talks about the processes of gathering requirements, developing a game concept and narrative, creating and testing the prototype, and delivering the toolkit to a group of librarians.

Gathering Requirements

In fall 2012, we led a Delphi study with ten academic librarians who had previous experience in using games for library activities. The Delphi study method is an iterative surveying method that allows the asynchronous building of consensus with experts through a series of surveys The goal was to develop a prioritized list of technical and functional requirements for an alternate reality game toolkit in an academic library. The resulting list of technical and functional requirements, which follows, was drafted by the library panel, ranked by priority, and revised over several rounds by the panel. The following list was shared with the librarians and then used to guide the design and development processes.

Technical Requirements

High Priority

- Multiple users can access the game at the same time.

- The ARG needs to run in different browsers.

- There must not be non-standard plugins requiring administrative privileges.

- The ARG meets ADA compliance through 508 Web accessibility guidelines for vision and hearing impaired participants.

- The ARG needs to be accessible via the open Web and not installed locally.

- If there is important audio, there is a transcript or subtitles available.

- The interface is intuitive and easy to work with.

- The ARG can be run on a mobile device.

Medium Priority

- There are troubleshooting tools for library staff.

- There need to be no cookies or downloads required.

- The game can be played with a keyboard or a mouse.

Low Priority

- The ARG needs to be accessible with limited Internet speed.

- There is a text-only version of the ARG

Functional Requirements

High Priority

- Users get some proof of completion.

- There are tools available for a staff member to use to keep the ARG running.

- One failure should not end the experience; users should be able to continue when stuck.

- There needs to be a way to track user participation and statistics to help instructors wanting to integrate the ARG into a course.

- Users can get a clue before skipping a question.

- The library can use multimedia instead of words for game elements.

- There is a robust help system for library developers and end users.

- Reporting will allow library staff to see how patrons are performing on challenges.

- Users can save their game and continue later.

- There can be links to other Web-based resources within the ARG, both library-based and external.

Medium Priority

- There is a passcode to allow staff members to get past any challenge to help patrons.

- There is an automated report for broken external links.

- There is a map of the library integrated throughout the tool.

- There is a way for library staff to see what other libraries have created.

- There should be a way to print the ARG to make a paper-based version.

- Users can be part of groups or teams.

- Each library can create multiple experiences for different difficulty levels and different topic areas.

Low Priority

- Participants can go back and change answers.

- There is embedded access to the library's catalog, databases, and digital collections.

- Users can get help from a staff member even when not in the library through IM or chat reference, or have easy-access to a telephone number.

- There is a way for users to share experiences.

Developing the Game Concept and Narrative

In April 2013, we met consultants at MIT's The Education Arcade (TEA) to develop the story for the ARG. The core concern was "How can we create an information literacy game that is more than a traditional fact-based scavenger hunt?" within the constraints created by the Delphi study. The major decisions from these meetings were to theme the challenges in the game around a controversial issue relevant to the student, and to raise awareness that library resources can deepen understanding about an issue. The basic storyline was developed, namely: the user must choose between assisting an artificial intelligence (AI) who infiltrated the library system and is trying to put the world on a sustainable path or assisting an unknown voice from the future rebelling against computer overlords.

This dystopian-themed narrative was presented over five story beats exploring the story between the user, the protagonist AI, and Sarah (the rebel from the future). As users proceeded through the game, they were presented with the narrative through two interfaces:

1. An educational game with retro-style pixelated graphics represented the method that AI used to reach out to the user. This included all of the trappings of reward-based gamification, i.e., points, levels, and achievements, as well as the look and feel of a poorly-designed question-based educational game.

2. A simulated instant messaging (IM) window appeared with mysterious messages while the user was answering the first question. This IM window was the interface to rebel from the future, Sarah. (See figure 1.)
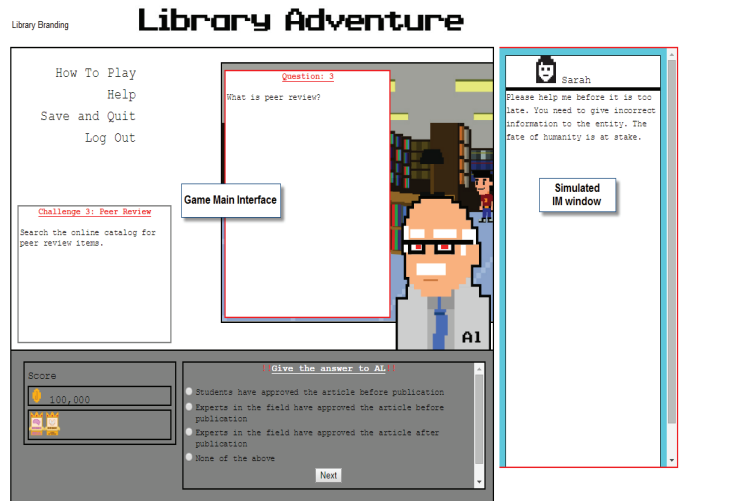
Figure 1: A Screenshot of Library Adventure with Labeled Interface Elements

The first two beats of the story were universal for all users. The third was a decision point where the user must choose to align with the protagonist, Al, or Sarah, the rebel from the future. Neither was "the correct" choice; each choice led to a different ending. Users engaged with the story by answering questions (users answered correctly if they chose to ally with Al or incorrectly if they were working with Sarah, to fool Al) and learning about the consequences of their choices.

This story was created around a series of five challenges. The challenges, which consisted of questions, clues, answers, and responses designed to explore different sides of a controversial issue selected as potentially relevant to the users, were the input created by the librarian and entered through an administrative back-end module. The challenges were intended to educate the user about a type of resource, ask the user to locate and read a specific item, and then encourage the user to reflect upon and answer a question about that resource which related to the controversial issue. After engaging with the challenge and clues, the user should have learned about a new type of resource and one aspect of a controversial issue.

We suggested librarians avoid factual questions where a user simply scans the resource to locate an answer, but instead design challenges that require that the user read and analyze the resource to answer questions correctly. We also suggested that some challenges require the user to contrast different resources to answer a question. The goal was to create questions that required more engagement than "scan the text for a specific fact".

In order to create an opportunity for reflection, users were asked for their views on the controversial topic at the start of the game. At the end of the game, the users were first shown their own opinion, then shown post-game reflections by other users and finally asked to provide their own reflection once again to share with others. The goal of this progression was to replicate a group debriefing process, a practice intended to increase participants' understanding of an issue.

Developing and Testing the Prototype

The game was designed and constructed around the top priority functional and technical items listed in the Delphi study. For example, the game's low-resolution graphics and largely text-based interface fulfilled the technical requirements of a game that could be run on older library computers, different browsers, and mobile devices. There was no audio unless the library chose to integrate links to multimedia. Aggressive testing was done to ensure ADA compliance using screen reading software to ensure that Section 508 web accessibility guidelines were met.

It was also important to include reflection as an element of the game, as learning requires both doing and reflection. Users were asked for their views about the issue before and after gameplay, and were able to view reflections shared by others. The sharing of information was meant to help users consider and become exposed to other forms of thought and conclusions generated within their own community.

Stress-testing was done through the Syracuse Game Designer's Guild, a community group of game designers, developers, and players. Fifteen playtesters suggested modifications to the narrative and addressed typos, use of animation, and increasing the text prominence for the correct responses to questions. Some users expressed uncertainty as to whether they chose correctly between the two main game characters. Modifications to the code,

corrections of typos, and subtle changes to the interface were done based on the feedback obtained from Game Designer's Guild play testers.

After updates were implemented, the prototype was tested with 20 librarians and library assistants. A number of game testers were confused with the ARG layer on top of the traditional educational game and did not understand why the basic game was interrupted. Some testers thought that the program was experiencing errors and contained typos, as fake error messages and "leetspeak" appeared on the screen as AI grew weak and lost control. Testers who did not engage with the narrative found these elements bothersome, perceiving that the ARG components hindered the Library Adventure educational game.

Some users found the narrative decisions required in the game to be frustrating, as neither choice is entirely good or bad; users wanted more information as to which was the "right" choice to make to win the game. Another narrative challenge was providing users with a definitive confirmation of correct answers because in the backstory, AI did not know the information that he was asking for. AI would confirm any answer as correct, while Sarah continued to encourage the player to lie to AI.

These plot-based concerns highlighted the key difference between an ARG and a traditional educational game. The design concept of an ARG is that the user is immersed in a different reality; the disorientation was intentional and in line with ARG design goals. Theoretically, it is this disorientation that makes an ARG engaging, as it taps into users' intrinsic motivation fueled by curiosity to explore the narrative mystery instead of relying upon extrinsic motivators like points and levels.

However, we learned from interviews that some librarians were uncomfortable with the idea of releasing a game for students that was intentionally designed to disorient users at first; librarians were afraid users might choose to simply quit the game when confused. To help mediate this confusion, a game entry screen was developed to provide the user with the option to either read the backstory prior to playing or play in a fully immersive ARG manner, where the story unfolded as the game progressed.

In the original design, the choice to support AI or Sarah came through the actions of the users: if the users gave AI the right answers, then they supported AI; if they gave AI the wrong answers, then they supported Sarah. Many users looked for a correct choice between the two game characters in order to win the game, when the narrative did not support a correct choice—just two possible paths. To help reconcile this concern and give users a "win state", the game was modified so that users were given a more blatant option to choose which character they would support, and post-choice narratives were changed such that the player's choices led to a successful ending. If the user sided with AI, then he turned out to be benevolent and supported the user's choice. Alternatively, if the user sided with Sarah, then AI became threating and evil, supporting user's choice.

Delivering the Toolkit

After internal testing, the toolkit was delivered out to the librarians who participated in the Delphi study. Guidance in developing content to engage users was delivered to librarians through emails and a video. The two sample games were also shared with librarians. During fall 2013, few libraries had rolled out or implemented games; it seemed that librarians were intimidated or could not find the time to create their own challenges. While we waited for the librarians to develop games, we worked on an administrative reporting feature so that librarians could view basic reports about their users. In December 2013, we offered individualized assistance for librarians to help create their challenges. In January of 2014, we added another ten librarians to the testing pool. We stopped gathering data about the played games at the end of February 2014 to allot ourselves time to interview librarians and analyze the gameplay data.

There were nine different games created by the librarians, and the games were played fifty-five times. Three of the games garnered the majority of the plays; other games were created but not released to patrons. We were disappointed that more librarians did not create and release games. That said, as the main goals of this grant were to collect requirements, explore ideas, and create and test a prototype, we reached those goals and learned many lessons useful for audiences interested in designing games for librarians.

About two-thirds of the users who started a created game worked through the initial reflections and answered the first question created by librarians. About half of the users made it to the third question, and about one-third of users completed all five questions. There was an optional survey at the end of the game, but only nine users completed that survey and three completed a follow-up survey.

Librarian Interviews

Fifteen librarians were interviewed and shared their experiences. Librarians who created games shared their creations with colleagues for feedback about integrating the game into instructional programs. Interviewed confirmed our suspicions that only a few librarians shared the game with students; in many cases the gameplay was limited to just library staff for testing. Many librarians reported that the story-based approach was not what they were seeking; they were seeking a generic platform to ask questions and have the system track users and answers that could be used for a self-guided tour.

Many librarians did not test the game with students because they believed they knew what students would want to play. One stated "if it was confusing for the staff, we knew it would be too confusing for the students." Other librarians believed the pixel-based graphics would turn students away as the graphics were old-fashioned.

Librarians who were more familiar with gaming narratives and pixel-based games like Minecraft understood the design principles that drove the game, but others refused to even playtest the game with their students.

There were some inconsistencies between the results of the Delphi study and the desires of the librarians once they saw the implications of their technical and functional requirements. Several wanted animations, audio, and more graphical "flash" in the game, features which would make it difficult to create a game accessible to screen readers and functional on older computers in quiet public spaces. Because some libraries were at schools with game degree programs, they were accustomed to games with a heavier emphasis on graphics, and so they were disappointed in the choice to use retro graphics.

All librarians expressed interest in incorporating more gaming activities into their libraries. However, allocating time and funds for gaming was problematic. Indeed, many librarians had to work on game-based activities outside of their formal working hours. The opportunity to test and/or create a game using the toolkit allowed many librarians to consider what kind of game would be attractive, or engage their audience(s). The time it took to create five challenges proved to be a barrier to customizing and using the game. Had the toolkit been easier to implement by providing pre-developed challenges that a library could choose from, we anticipate that more librarians would have been able to implement the tool.

Some librarians struggled with the task of creating an engaging challenge. Few librarians are trained game and puzzle designers. Create an engaging game using this toolkit tasks the librarian to create interesting challenges. When we realized the librarians were struggling, we made available a puzzle design consultant. However, this help came too late; many had already given up.

Lessons for Game Design in Libraries

One of the valuable outcomes of this project is lessons learned for successful game design for libraries. These lessons, along with the requirements presented earlier, can serve as a guide for both librarians and game designers creating games in library settings.

Lesson 1: **Many Players Don't Read Text** Because the technical and functional requirements desired by librarians guided game design, we saw no design option other than a text-based game, as the requirements of ADA-compliancy, screen reader usable, and functional on older computers and different browsers pointed to a text-based game as the best choice. We advise challenging these requirements to explore the balance stipulated requirements and creating an engaging game. If this is truly a requirement, then we suggest building two games—a text-based game for low-bandwidth and ADA needs and a multimedia-based game to attract a wider audience.

Lesson 2: **Librarians should be Customizers instead of Co-Creators** While the concept of a customizable game was attractive, we overestimated the level of design experience required. While we developed the story and the interface to enable librarians to create engaging challenges, we expected librarians to be co-designers of the game. Rather, a customizable toolkit where librarians select menu options and add small amounts of customization would most likely be much more successful.

Lesson 3: **Encourage Librarians to Test Games with End Users instead of only Staff** We were surprised how many librarians only tested their games with other librarians or staff members instead of end users and did not offer games for end user testing. One common complaint was the retro videogame style and reportedly outdated graphics. Many librarians were unaware retro-style graphics are a common modern design model. The same is true for the heavy story layer in this game. Librarians typically do not use story-based games, so some librarians did not feel the story-based game was appropriate and did not reach out to end users.

Conclusions

This study underscores an ongoing challenge between researchers and librarians; as a research project, it is acceptable (and desirable) to pursue a project that explores new areas and thus may fail, but librarians who view this project as a service and representation of their library may not be willing to take that risk. Our own testing with students did not bear out the librarians' concerns, but as the librarians are the gatekeepers to their users, we needed librarian participation for testing the games in academic library settings.

References

Andersen, M. (2011, March). Vanished: A mystery game at the Smithsonian. *Wired*. Available online at http://www.wired.com/2011/03/mystery-game-vanished-at¬the-smithsonian/

Kim, J., Lee, E., Thomas, T., and Dombrowski, C. (2009). Storytelling in new media: The case of alternate reality games, 2001-2009. *First Monday 14*(6). Available online at http://journals.uic.edu/ojs/index.php/fm/article/view/2484/2199

Kolowich, S. (2011). What students don't know. *Inside Higher Ed*. Retrieved from http://www.insidehighered.com/news/2011/08/22/erial_study_of_student_res earch_habits_at_illinois_university_libraries_reveals_alarmingly_poor_inform ation_literacy_and_skills

Markey, K., Leeder, C., & Rieh, S. (2014). *Designing Online Information Literacy Games Students Want to Play.* Lanham, Maryland: Rowan & Littlefield

Acknowledgments