Quarantined: The Fletcher Library Game Project

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The Lower Division Program at Fletcher Library was created in February 2004 to design and deliver library instruction to first year students. Sequenced curriculum, based on local and national competencies and skills is delivered through an existing structure, primarily the freshmen English classes. Program contact with freshmen takes place through these outlets: Writing Across the Curriculum (WAC) 101, English 101, English 102, English 105, and Learning Communities comprised of 2 linked content courses. Instruction and services offered must be sustainable and scalable. Team members, recruited from existing staff, work independently and collaboratively but consult and communicate with other instruction librarians to ensure the overall instruction program is cohesive and compatible. Lower Division Team members include the program coordinator who is charged with leading and building the program, two library staff in the process of earning MLS degrees, a technology librarian, and a new library graduate hired in a split reference/instruction position. Each team member, except the coordinator, has other responsibilities that often take priority over the lower division commitment.

A primary goal of the Lower Division Team is to create web-based learning materials to use in place of traditional lecture-based instruction. Many of the lower-division students fall within the Millennial Generation, indicating a need to tailor these materials to students who expect visual, interactive and experiential learning experiences. Initial investigations prove educational gaming is a viable option for use with Millennials.

Games continue to gain in popularity, especially among Millennials. A 2003 Gallup poll reported 69% of teenagers play video games each week (The Gallup Poll, 2003). Because of this increasing popularity, several researchers have begun to analyze the learning potential of games. Prensky (2001) states that computer games can create a new learning culture which corresponds with the habits and interests of students. James Paul Gee's research (2003) suggests that the learning principals incorporated within games can be used in other settings. He also believes that using gaming technologies for instruction in schools will eventually become pervasive.

The decision was made by the Lower Division Team to create an online game. Faced with this challenge, the team began the process by researching games, gaming, and gameplay. Several weeks were spent playing many types of games: board games, games on DVD, Massive Multiplayer Online Games (MMOGs) and online Flash games.

The game development process started with designing a paper-based game. A board game required the least investment of time and money, was attainable by the deadline, and was intended to serve as the prototype for a computer-based game. In reality, it did not function as a prototype, but has been successfully used in classes. The feedback from students has been positive and enthusiastic. According to Gallegos and Grondin, "Students indicated they had fun while learning about something they deemed as rather dry and boring. Using a game appears to be an innovative and viable way to teach students about the information environment" (Gallegos, 2006).
The book, *Andrew Rollings and Ernest Adams on Game Design* was an invaluable source of information during the development process of the online game. The authors recommended a game development process that included producing three documents: a High Concept document serving primarily as a marketing tool; a Game Treatment document outlining development requirements and a timeline; and lastly, a Game Script containing the game plot, decision trees, and gameplay elements.

Flash was chosen as the development platform for the game to enable delivery over the web and avoid responsibility for client side applications and updates. The process of identifying a programmer involved posting requests to local technology listservs and an international Flash game programming wiki. Two Flash companies with advertisements on the web were also contacted. After reviewing the online portfolio of each applicant, the Game Script document was sent to the top three candidates along with a non-disclosure agreement. Following this, each programmer sent a quote. The programmer selected had the most educational gaming experience and was local. He subcontracted design work to a designer he had worked with in the past.

The timeline originally created for the development of the online game allowed one year for development of both the board game and the online game (Figure 1). In reality, the development took about 5 months longer than anticipated. The original plan was to design an online game, hire a programmer, conduct usability studies with students and make necessary revisions prior to the start of the fall 2006 semester in mid-August. By the end of the spring semester 2006, it was clear the project was behind schedule. Team inexperience with game design and dissatisfaction with design elements were contributing factors.
Figure 1. Original timeline for completion of Game Project

The design stage of the development process took much longer than anticipated. Getting the characters to look right seemed to take forever. In hindsight, solidifying the design ideas a bit more before a designer was employed would have saved time. When designs were not deemed satisfactory this was communicated along with suggestions about what was needed. Using the programmer as liaison to the designer resulted in lost time due to the many revisions. Direct contact with the designer likely would have made the process easier and smoother. In his defense, the programmer indicated that the graphic artist wasn’t meeting his deadlines. The team felt in that case, he needed to work with someone who was more reliable but those thoughts were not communicated. Following is a sketch of the first design for the librarian character (Figure 2), which was unacceptable, along with the final approved design (Figure 3).
The project team regularly met for an hour each week, sometimes more. In order to finalize the game script there were meetings everyday during one week time period. Creating scenarios for the storyline and text for characters turned out to be an enormous endeavor. As the team worked through the game script it discovered the storyline needed major revisions because previous words and actions did not flow well together. Once the script was completed and presented a cohesive story the team anticipated somewhat smooth sailing, however, this was not to be the case.

After nearly 4 months of working with the programmer, the team was frustrated and disheartened. At times, meeting with him seemed fruitless. He took notes at meetings, agreed to tasks and timelines and received follow-up emails summarizing agreements, yet he routinely needed reminders when the tasks were not completed several weeks later.

Eventually the team reached a point when it was completely fed up and burned out with the game, with the process, and especially with the programmer. The length of the project, the looming semester, a completion date that seemed to move as we neared it and the feeling of gentle pressure from library administration were also factors. The project timeline was adjusted several times to accommodate the situation. The completion date of August moved to October then quickly moved again to December and the end of the semester causing concern that an online game targeted for use in the fall would still not be ready for the start of spring semester. The team was generally frustrated with the slow and tedious progress, however, even at the lowest times there was always someone who rallied the team providing hope the others needed.

The process for testing and fixing bugs within the game was a complex process. At first, there were so many bugs, it was difficult just listing them all. An online bug tracking system was created and bugs were identified and tracked through it. These lists were kept and sent to the programmer after each meeting. Often times, fixing one bug created another. After the majority of the bugs were resolved, the game was tested with the library's student workers. This was an invaluable, eye-opening experience. At this point in the process most of the team's objectivity was gone. The student's reaction and ability to play the game enabled the team to make worthwhile modifications such as editing and streamlining the character's interactions.
A request for English 101 instruction came sooner than hoped for as the team hurried to ready the game for a live class of students. The first class session brought a mix of excitement and apprehension since there was no way to know how students would react to the game. Several other factors heightened the nervousness prior to the first class. The project's technical expert was unavailable to attend the class to assist with any issues that might arise. Also, the course instructor, who had previously declined overtures for instruction, requested an additional activity to teach students about navigating the library website. This added pressure as the team embarked on its maiden in-class voyage with the game. Following the activity, forty minutes remained to administer a pre-test, play the game, administer a post-test, have an open discussion of the game and complete the instruction evaluation. Ideally students should have a minimum of thirty minutes for game play.

Succeeding classes somewhat mirrored this situation. Every minute of a 75 minute class session is needed in order to cover the information, play the game, and complete the assessment and evaluation. It is fairly common for instructors to take anywhere from five to twenty-five minutes of class time for announcements etc. leaving insufficient time to complete instruction. Strategies for addressing the time issue are being formulated for subsequent versions of the game.

Pre-game instruction that introduced students to searching the online catalog and databases and locating full-text journal articles seemed to be insufficient to prepare them for finding information within the game. Although the mini-lecture and demonstration was prefaced with a statement about its relevance to successful gameplay, students continued to struggle with using the appropriate information sources. Logging into the password-protected game was problematic because students failed to listen and follow instructions. Though guided instruction was provided, students demonstrated difficulty in maneuvering characters, reading and following instructions, using the help screens and understanding the purpose of the task. Library instructors spent time in every session monitoring student progress, providing clues as to gameplay and recording information as bugs were encountered. The notes gathered during these classes are currently being used to improve the game.

Due to the high investment costs, the team was unable to embed assessment within gameplay. In place of this, a pre-test and post-test was developed in Survey Monkey for use in assessing student learning. Eighty-six percent of English 101 classes in the spring semester 2007 received instruction; however, time issues for in-class instruction and feedback resulted in 78 post-tests or 36 fewer responses when compared with 114 pretests. While these lopsided numbers do not present a truly accurate picture of student learning it is clear that there remain areas of confusion for students. A majority of students correctly indicated 1) a keyword search is the best beginning search for locating books on a topic, 2) the online catalog is the appropriate tool for locating books, 3) the circulation/reserve desk is where to go to find a book placed on reserve, 4) author, title and keyword searches are the most common searches, and 5) a citation is the basic information needed to identify a book or article. Although students appear to know these,
there was no real increase in the percentages on the post-test results when compared to pre-test answers. In some cases the percentage of correct answers slightly decreased.

Students had problems identifying parts of citations such as distinguishing between the title of an article and the title of the journal, comparing different citations and correctly identifying the type of source it represents, and knowing where to search to locate articles. In the pre-test 58.8% (N=67) of students correctly identified the journal title but 36% (N=41) incorrectly identified the article title as the journal title. For the same question in the post-test, 50% (N=39) of students correctly identified the journal title while 48.7% (N=38) incorrectly selected the article title as the journal title. When asked to look at citations for different sources the results were disappointingly similar. Students were directed to match citations to a book, book chapter, journal article and newspaper article. They correctly matched the book citation 61% of the time in the pre-test and only 54% in the post-test. Identifying the book chapter and journal article citation were particularly problematic. Students frequently confused these different sources. Another area of confusion was Library of Congress call numbers. For many students this is a new system to learn. In the pre-test 50.9% (N=58) said the letters at the beginning of the call number indicate the book's subject area while 36.8% (N=42) thought the letters were the author's initials. Sadly, in the post-test 43.5% (N=30) of students thought the letters were indicators of the subject while 50% (N=23) thought they were the author's initials. Although the numbers of students taking the pre-test versus the post-test are unequal the team has the ability to match answers from each based on IP address and can eliminate the extra pre-test answers. Although that level of analysis has not been completed it seems clear that as this version of the game is structured students are not learning as much as anticipated.

The amount of feedback about the overall instruction, including the game, is limited due to the lack of time available in class to have students complete an evaluation. The feedback that has been received is mixed. Student comments ranged from pretty cool, fun, impressive, nice, helpful, interesting, okay and better than they expected on a "library enlightenment day" to complicated, frustrating, confusing and "I did not learn anything from it".

A number of changes to improve game playability were identified. Examples of immediate changes include such things as adding the ability to cut and paste text within the game, a "mission status" screen with hints for completing missions, fixing the "stuck in the library" bug, moveable windows for backpack and lists and flashing interactive hotspots. Some came from suggestions and requests for features from students. Others developed from observations of difficulties students had while playing. The changes were organized, discussed and prioritized. Those that were fairly easy to incorporate into the game or were necessary for continued use of the game were identified for inclusion in version 1.1 of the game. Those that seemed more involved were set aside for inclusion in version 2.0.

In addition to fixing bugs and adding more functions such as "cut and paste" the game needs to be more interesting with varying levels of difficulty and sophistication and
assessment should be integrated within game play. Embedding assessment into the game will allow the pretest and post-tests to be eliminated, which will free up some classroom time.

Scalability continues to be a concern. The game cannot be easily played by students without a short introduction to library resources. Currently, this introduction is provided in person. A major goal of the game in addition to teaching students was to make the program sustainable and scalable as students numbers increase while staff numbers remain static. To accomplish this goal in version 2.0 one strategy under consideration is to incorporate a virtual introduction into the game, rather than having someone provide a face to face introduction.

Despite the various issues inherent in any big project, the team is very satisfied with the game that resulted. Future versions need revision but the team succeeded in completing an enormous project and learned invaluable skills and lessons in the process. Without the full support of library administration including the finances to produce the board game and pay a programmer such a project is virtually impossible.
References


