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Designing Mobile Technology to Enhance Library Space Use: Findings from an Undergraduate Student Competition

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Introduction

Mobile devices are a ubiquitous part of the modern student experience. As educators develop applications to leverage these powerful tools, there are still many questions about how to move beyond developing a mobile version of pre-existing campus websites. This is particularly true in the academic library, where the next stage of the mobile evolution will necessitate developments that incorporate the more advanced features of modern smartphones to create deeper student engagement with library spaces and resources.

Student Teams to Design Mobile Apps

To explore how libraries might integrate student perspectives and needs into their mobile development workflow, one large academic research library developed a fun, collaborative design methodology in order to stimulate student creativity. As part of a national IMLS (Institute for Museums and Library Services) grant, "The Student/Library Collaborative: Toward Transformative Mobile Library Service," the research team organized a student competition that challenged student teams from across majors to design mobile apps with features that they and their classmates would want to use to increase and enhance their use of library spaces.

Benefits of the Competition

The benefits of the competition for the library included identifying potential student needs for mobile applications and location-specific access to library data, as well as assessing the viability of the competition format as a repeatable activity for the library's overall mobile development efforts. For the student participants, the competition provided a chance to earn prize money but, more importantly, it gave them a valuable resume-building opportunity to develop and design a business solution, and to deliver a formal presentation to a real-world client. Unlike many of their class experiences, in which their client is entirely hypothetical, the library in this scenario had actual operational needs, and the ideas developed by each team had the potential to result in the implementation of real world services. For this research experiment, the library served a hybrid role as part traditional client, and part partner in the design process.

Research Questions

The research sought to answer the following questions:

- What location-specific library space needs do undergraduate students have?
- How can mobile apps increase the use of library facilities and services?
- What is the validity of the competition methodology for generating actionable ideas for mobile apps and knowledge of student learning space use?

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Literature Review

The literature review begins with the theoretical underpinnings of participatory design, particularly as the authors' approach relates to student-sourced ideas and collaborations. The researchers drew on applied anthropological tools as a means for gathering and understanding findings. Next, this review attends to the practical work of designing software and considers common methodologies of software design. Finally, strands of technology-centric design and their applications are examined to provide a contrast to the approach utilized in the mobile app competition.

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Theoretical Underpinning: Participatory Design

In the case study presented in this article, the research team implemented a participatory design approach in which students were consulted during the initial design phase, and co-developed library services in consultation with library professionals. The participatory design approach evolved from methods utilized in applied anthropology in general, and specific tools of cultural/ethnographic anthropologists.

The seminal work employing applied anthropological methods can be traced back to the Rochester Study: *The Undergraduate Research Project at the University of Rochester* (Foster and Gibbons, 2007). This formulation of studying students was refined to address collaborative space design in libraries and other spaces in higher education (Foster, 2012).

Common in the literature of studying student mental models and schemas for library utilization and needs is the use of ethnographic methodologies (Wildemuth, 2009). The tools used in cultural anthropology inform case competition methodologies; research is considered ethnography when it "focuses on studying the behaviors, beliefs, and experiences of a specific group in order to describe and define that culture," (Beck & Manuel, 2008, pp92.)

Applied anthropological work was extended in the present study to address mobile application design. This work is valuable to libraries for the collaborative approach it takes to forming partnerships and lessons learned by working with students as co-creators of library access tools. An example of previous work in collaborative student-library partnerships includes Cornell University, who reported repurposing library data for an iPhone app, and is indicative of the promise of collaborative technology design with students while working on mobile apps for library data (Connolly, Cosgrave, Krkoska, 2011). Researchers of the present study extended this further to encompass campus spaces and data outside of the library.

Top-down Development

Mobile application development by library technologists usually progresses along a traditional top-down view. This development process typically begins with requirements established by professional staff followed by coding implementation by library systems developers. In this approach, it is only when library professionals have completed their design implementation that a student encounters the library app, either from the library website or by searching their school from an App store like Google Play or iTunes.

Technology-centric View of Design

In the case at North Carolina State University, (NCSU) where one of the first native apps for library access was coded (NCSU Libraries 2014), this top down paradigm included professionals from the digital services division, as well as experts in special collections. It is not clear from the project material if students were consulted in the design phase (Sierra & Wust, 2009). Rather, the NCSU documents present a technology-centric view of design that starts with the mobile technologies and designs services for the devices.

Similarly, the professionals at Oregon State University showcase web options to mobile access and present choices for technology first designs. Their article from the Code4Lib Journal (Griggs, Bridges, Rempel, 2009) presents library preferences for display of web content on mobile interfaces. Analytics of web logs are the method used for gathering user trends. Web log analysis uses summative evaluative principles, whereas a participatory design approach tends to be best served by formative evaluation techniques, utilized also in rapid prototyping projects (Jones & Richey, 2000). Formative evaluation was the theoretical underpinning to the case reported here, in which the researchers valued iterating through ideas, and having multiple consultative sessions with students so that final presentations would be made more professional and useful to library and campus practitioners.

Methodology

Participants for the student mobile app development competition were recruited from across a wide variety of disciplines, which resulted in teams that had a diverse mix of technology skills, design skills, business planning, and management skills. Individual departments across campus were targeted as part of the marketing strategy. The researchers' goal was to attract students with a wide variety of interests and experiences in using the library, in order to develop mobile apps with rich selection of features by the end of the competition.

Students could apply as individuals who would be placed on a team later, or they could form teams with chosen classmates as part of the application process. The application asked for demographic information, such as major and year in school, as well as short answers for the following questions:

- Why are you interested in this competition?
- What do you see as the future of mobile computing, particularly in the academic environment?
- What unique skills would you bring to a team as part of this competition?

The essay component proved critical in evaluating student creativity and potential for meeting the goals of the competition. Many useful design themes emerged from the application essays themselves, which could be of interest to campus units wishing to replicate this participatory design methodology.

Team Formation

The grant team reviewed all applications. The goal was to have 4-6 teams, with a maximum of 5-6 members per team. A total of 36 applicants applied initially, but dropped to 26 applicants at the time of the orientation meeting. Five teams (comprising 19 total applicants) were pre-formed by students who knew each other. The other 7 applicants were assigned to teams by the grant team. A total of 6 teams were created; the five that consisted of their own pre-selected members with an additional member assigned to them, and a new team of all the remaining members. At the final presentation there were 25 applicants. The teams represented students from diverse programs such as industrial design, graphic design, computer science, statistics, industrial engineering, architecture, marketing, civil engineering, general engineering, urban planning, new media and art.

Student Preparation

Participation requirements were outlined in a Student Information Packet. This document, which was influenced by similar ones used in a local Business Team Competition and MIT's Entrepreneurship Competition (MIT 2014) outlined the requirements for a successful mobile app, and set a timeline for the individual stages each team needed to complete in order to develop a qualifying mobile application. Each app was required to address student needs for discovery of and access to information about library services, collections, and/or facilities. Apps also needed to recognize location-specific needs, and students were encouraged to think of related third party data, which might enhance the user experience and complement the library component. Finally, apps needed to offer original functionality that did not duplicate existing library mobile applications.

It is important to note that the final presentation did not require a functioning app; rather, students were encouraged to focus their energies on developing the best idea and client pitch, and to present findings from their investigations of actual student needs related to library use. Final presentations required visual mock-ups and descriptions documenting the identified problems the app was designed to solve and how it would improve the student library experience.

Based on recommendations from a business faculty member who had successfully run many local Masters of Business Administration (MBA) and related Case Competitions (see, for example http://www.mba.illinois.edu/experience/experiential-learning/case-competitions.aspx), a series of mandatory sessions formed the timeline for the competition. Mandatory participation was critical in order to make sure that teams would stay together through the month-long event. Students with poor time management skills or those who were overcommitted and unable to be highly engaged in the design process would be eliminated from the competition. (See Appendix 2, Table 1.)

Informed Consent

Institutional Review Board (IRB) documentation for studies involving Human Subjects Research was completed for the competition as part of a larger IRB that encompassed the entire grant. It proved problematic to combine the competition IRB as part of a larger IRB for related studies of this grant, as all questionnaires and research methodologies needed to be approved together, which slowed the process down. The lesson learned was to do an individual IRB specifically for the Competition, in order to reduce start-up time.

The components of the IRB related to this competition included: recruitment flyers and procedures; a description of the competition methods, expected outcomes, an informed consent form; and survey questions that were asked as part of a debrief session at the end of the competition.

Licensing and Contest Rules

An important objective of the competition was to put the app ideas that were generated by this collaboration with students into production. The grant team worked with campus legal services to develop a License Agreement that specifically detailed the ownership and reuse model for the intellectual property generated by the event. This included mobile app concepts, presentation materials (e.g. PowerPoint files, videos), and any accompanying code. The option the researchers chose was one of co-ownership, in which both the teams and the library had rights to develop applications based on competition content. This model seemed the most flexible, and provided for both library needs to generate actual functioning apps, as well as rewards to the students for their planning and work. All students were required to sign off on the licensing agreement as part of their application process. Formal Competition Rules (see Appendix 1) were also developed in consultation with campus legal services, and were based on models from prior student competitions with which they had worked. PDFs of

the rules and other related competition documents are available through the Library's institutional repository at: https://www.ideals.illinois.edu/handle/2142/47020.

Orientation Session

A mandatory two hour introductory session for all team members kicked off the event. In addition to a team meet and great (including pizza and soda), the grant team discussed the goals for the competition, the timeline, judging criteria, and provided an opportunity for questions and answers. Team members then met to begin a discussion of their ideas and to organize their own internal planning processes. Some of the self-formed teams had already met to discuss ideas.

Competition Site Visits

Based on one of the consultations the grant team had with a colleague who lead the MBA Case Competitions, the researchers decided to organize a series of site visits in order to have the student teams analyze various location-dependent needs their peers might have for library services and resources. The objective was to take the students away from the researchers' home library, and have them reflect on what students would like to know about individual library spaces before they decide whether or not to go to the library. They were then to document ideas they brainstormed from the venues and any app concepts based on those ideas that would connect the campus library's facilities and resources to meet their needs. Typical student locales were chosen as starting locations, including the Engineering Library, a large lecture classroom, a Café, the Campus Student Union, and a Large Residence Hall. There were three tour groups established, each consisting of two teams and two grant team members to lead the tour and record observations. Each group had 15-20 minutes at each location to examine the space and discuss how a library mobile app might address student needs while in that location. At the end of the tour, teams turned in a one-paragraph summary of their top observations from the session.

Questions team members were to consider included:

- What research needs might students have in this location?
- What library resources or services would be helpful for students to access in this location?
- What are the related class needs that students might have in this location?
- What other features of a mobile device or app might benefit student research, studying, or class needs in this location?

Students had some confusion initially about the purpose of the site visits, and the grant team decided afterwards that the questions should have been presented at the beginning of the tour rather than the end, along with a sample scenario for what teams might do on their tour.

Presentation Review Sessions

After the site visit, students had two weeks to work on the design of their applications. They then met with grant team members for a presentation review. Each team was allotted one hour for the review in which to set up, run through their presentation (20 minute maximum time allotted), and then discuss feedback and questions with the grant team. The goals of the review sessions were: to make sure that students were on track and not waiting until the last minute to pull their ideas together; to make sure they were following competition guidelines for content and relevance of their app; to ensure high quality visual presentations and content; and finally, to answer any questions teams might have about how to best organize their mobile apps.

The feedback from the grant team to the presenters was communicated in a positive way, acknowledging the excellent work done, as well as identifying specific areas that were especially intriguing or unique, or areas that could be improved. Examples of some constructive feedback included to: label diagrams; add additional visuals on some text heavy slides; modify some of the case use studies to be more specific to library resources the app will address; take more time to highlight certain key features from the survey they undertook; reorganize a few slides to help the flow of the presentation; flesh out a particular function of the app (if unclear); emphasize certain critical components; and to provide a final recap of the value of the app.

The grant team also provided suggestions for students to work with others in their group on achieving a professional presentation style, including making eye contact and controlling utterances such as "um" and "kind of". Some team members asked relevant questions pertaining to ideas for other elements they might include or whether something should be excluded from the presentation. A few individuals asked about what to wear and various logistical questions. The teams were briefed on what to expect the day of the competition, and next steps for getting the presentation to the Project Manager so he could upload it for the final presentation.

It should be noted that the grant team members who did the review sessions were not judges at the final competition, which helped avoid any conflict of interest or possible favoritism for individual teams.

Final Presentation and Judging

Three judges, selected from amongst Library and Campus IT administrators, presided over the final competition presentations. The student teams were asked to arrive 30

minutes before the start of the competition to test that their presentation would load correctly. This was especially important for three groups who had various technical issues, such as needing to: practice switching over to an iPad from the web page; reformat their presentation to be viewed properly; get additional cables to help them switch from one device to another; or to practice linking to an online video.

Teams then drew for the order they would present and were informed that they were only allowed in the presentation room after their team presented in order to not give them any extra advantages for seeing other presentations. Each team had 30 minutes allocated, with 20 minutes for their presentation, 5 minutes for judges' questions and answers and 5 minutes for judges to discuss the presentation while the next team set up. At the end of the competition, judges conferred and rated the presentations, based on a rubric (see Appendix 2, table 2). Each team received some feedback from the judges on what they liked about their mobile app idea. Finalists were then announced and awards were presented.

Copies of all final presentations have been anonymized and posted in the authors' institutional repository at the URL noted above. Additionally, pictures of the winners and the competition process were posted to the grant web site http://www.library.illinois.edu/nlg_student_apps.

Mobile app mock-ups are presented in Appendix 3.

Findings

The original questions that the grant team explored with this competition were:

- What location-specific library space needs do undergraduate students have?
- How can mobile apps increase the use of library facilities and services?
- What is the validity of the competition methodology for generating useful ideas for mobile apps and knowledge of student learning space use?

Though this effort, a wide range of suggestions were generated, from specific student needs pertaining to accessing library, curricular, and campus resources, to broader concepts about how students contextualized needs for library spaces within the broader scope of their student experience.

Student Perceptions of Library Learning Spaces

One of the most important findings from the study was discovering a somewhat unexpected mental model for the library that the participants had in how they organized app content around courses, spaces, and people. While the grant team initially anticipated that students would design apps which focused entirely on library data (e.g. books checked out, hours, lists of study spaces, etc.), what the individual teams did instead was to organize their apps around the individual classes they were doing work for at any given time. This meant that the resulting app designs did not represent library spaces and services in isolation, but rather as part of an interconnected ecosystem that represented a student's daily scholastic life. The features in the design of many of the teams' apps thus focused on classmates, study groups, and timely data about resources and activity levels in the spaces these groups met. These components often combined in use cases to form an assignment level organization of content about both library and broader campus learning spaces.

In execution, this meant that the finished app designs brought library resources into and out of focus in a flexible, on demand manner, depending on a student's specific activity at any given time. Apps tended to have a flow that began with selecting a class, then choosing from a series of options tied to that class – course readings, forming study groups with classmates, and deciding on which campus spaces had the right layout and available technology for students to visit. Multiple groups on the initial site visits noted that before they walked across campus from their dorm visit to a distant location like the Engineering Library, for example, they wanted to know if there would be computers available, if there were group rooms they could book on the way, and also how loud various spaces currently were. A member from one of the teams noted on the walk to the Engineering Library that they would like their mobile app to be able to "incept" the details of their study group meeting into other members' minds once a decision had been made about the appropriate destination based on feedback the app provided.

Related to this key finding of how students organized app content in a progression beginning with courses, people, assignments, and then spaces, was the coordination needed to have similar information about all library spaces available as real-time data feeds, and comparable information from other related campus spaces where students might wish to have group meetings or conduct course-related activities. Students did not know or care about the independent administrative structures that exist on a campus. Rather, a major hope for the teams in designing their different apps was that the resulting product would help them make sense of the totality of campus learning spaces, and lead to discovery of previously unknown, but relevant resources and facilities to help them maximize their productivity.

Location Specific Needs

One of the original questions that guided this study was "What location-specific library space needs do

undergraduate students have?" In this event, student teams approached their space decisions by asking the question "What's happening where I want to be?" rather than "What is happening where I am?" This led to discussions about what characteristics of individual campus spaces they found valuable to know about as they evaluated the optimal location to conduct their academic work.

The discussions students had regarding location needs also led to insights for the grant team for the second question for the study: How can mobile apps increase the use of library facilities and services? The ideas for apps did not strictly focus on traditional library services or facilities, but incorporated broader campus, curricular or social needs. One of the most important resources students wanted to use their apps to connect to was their classmates. Team members saw little point in going to a prime location if the people they wanted to meet with were not there, and they wanted ways to either organize study sessions ahead of time, or discover locations where other study sessions were currently occurring. The resulting apps thus included features to facilitate this kind of planning and discovery, both for classmates students knew personally, and also as a way to meet and work with classmates they did not know socially. This observation indicates some need for a Four Square-like check-in feature for student-focused apps, which could connect individuals and groups at both the course and major level.

The other location specific needs included the desire to identify key available resources in each facility, as well as characteristics of the spaces themselves. One unexpected observation, noted by multiple groups during the site visits, was the relative noise level of each campus space. The teams wanted ways to know where louder and quieter spaces were ahead of time, so they could choose an appropriate destination. One group suggested developing a "noise-o-meter" into their app design so they would know where the quiet spots on campus were at any given point in time or places where it was alright to have collaborative conversations and discussions.

Discovery of campus learning spaces was another key theme for the groups. Specifically, one desired characteristic for some apps was the ability to recommend an alternate space if the space they were currently working in was not appropriate for them or their group. The app could also help with discovery of resources in a student's current location – providing information about features of their current space (such as reserveable study rooms) that they might not know about. It might then visually prompt them to take an action related to these features (such as booking a study room).

Competition Methodology Findings

Overall, the competition methodology produced high quality end products from all the teams. Each final app had useful and creative ideas for the library to consider in extending its mobile presence. The competition format itself seems to lend itself well to idea generation and feedback from students. The accelerated time frame for conducting the competition pre-determined that no actual, functioning apps would result. This was anticipated and part of the methodology with the acknowledgement that actual production of apps needs to happen outside of the competition event. The conclusion of this article discusses additional methods being investigated to take the next step of producing apps from the competition's results.

Another finding of the study is that students who preselected their team members worked well in terms of commitment and producing a quality presentation, but tended to exclude the additional member that was assigned to the team. The single team that consisted entirely of members selected by the grant team also functioned well, and won one of the top prizes. In the future, the best practice identified was to have teams consisting either entirely of self-selected members, or entirely of individually appointed members.

Additionally, six teams proved too many for a single final presentation before a judging panel. This pushed the event to over three hours, fatiguing participants and judges. Four teams would be ideal for a workable final competition. This would also allot more time for the judges to ask questions and interact with team members. Another option is to have two final rounds, and have different panels judge teams simultaneously. This method was used in some of the local case competitions, and allows for greater participation on the student end, although it does require more judges and administrative coordination.

Validity of the Competition Methodology

The validity of the competition rests in the value of working with students to design and create apps that are relevant to their needs. As a result of this competition, the grant team was able to answer the third question of the study with positive results: "What is the validity of the competition methodology for generating useful ideas for mobile apps and knowledge of student learning space use?" The competition yielded nearly twenty ideas for apps that the Library could develop based on student needs. Students also developed designs in ways that were unique, intuitive, functional, and that often diverged from what library personnel might produce. Another reason for the initial question was to ascertain whether or not this type of competition could be repeated to continue to get fresh ideas

from students and if it is cost effective. When analyzing costs, ($2,000 for prizes, promotion, and food) it was determined that the benefit of student interaction and contributions was well worth the cost. The ideas, rationale and conversations with the students about design and apps is critical to know and periodic events, such as this competition, can help libraries in their efforts to provide the most relevant services, facilities, and collections.

Conclusions and Future Directions

The results of the competition proved very unexpected in a number ways. While the initial research questions anticipated scenarios in which student teams would want access to the library catalog and their library account information, the teams, independently of each other, took the mobile app creation challenge in an entirely different direction. This ultimately resulted in a better understanding of students' learning space needs and approaches to integrating mobile technology into their academic lives.

A key next step resulting from this research is to work towards the coordination of information about learning spaces at a campus-wide level. This is a large endeavor, and requires consolidating the data feeds into a common format for retrieval and display on mobile devices, identifying the common features about spaces that students want to know, and ensuring that this data is collected in a comparable way.

The competition methodology itself was considered successful by the grant team, primarily as a way to discover and understand student mobile needs for organizing and presenting library and related campus information. One conclusion that was reached was that the competition really only needs to be run every two to three years, with a development phase following it to produce, test, and put actual apps into production. During the development phase, coding work can come from a variety of sources. Internal resources (coders and IT staff) can be used from any software development capacity an institution has, but there are also possible methods involving further collaborations with students. The grant team also investigated two particular collaborative approaches: first, the role of Computer Science classes in taking the ideas generated by the competition and producing functioning, production-ready apps. Second, the grant team explored a "Coding Camp" methodology, in which student teams developed code over a weekend that was focused on a limited number of specific app ideas and sets of functionality. These two projects will be discussed in subsequent articles. The goal for the researchers is that this combination of methodologies will allow libraries (and other campus mobile developers) to involve students across the full timeline of mobile app development, from conception and feature development through actual coding of a finished product.

References

Susan E. Beck and Kate Manuel, (2008). *Practical Research Methods for Librarians and Information Professionals,* New York: Neal-Schuman Publishers, 2008.

Connolly, M., Cosgrave, T., Krkoska, B., (2011). Mobilizing the library's web presence and services: a student-library collaboration to create the library's mobile site and iPhone application. *The Reference Librarian*, 52 (1) 27-35.

Foster, N. F., Council on Library and Information Resources. (2012). *Participatory design in academic libraries: Methods, findings, and implementations*. Washington, DC: Council on Library and Information Resources.

Foster, N.F. and Gibbons, S. (2007) *Studying Students: the Undergraduate Research Project at the University of Rochester* (Chicago: Association of College and Research Libraries, 2007) 80.

Griggs, K., Bridges, L.M., Rempel, H.G., (2009). "Tips on designing and developing mobile Web sites". *Code4Lib Journal* http://journal.code4lib.org/articles/2055

Jones, T. & Richey, R. (2000). "Rapid prototyping methodology in action: a developmental study," *Educational Technology Research and Development* 48 Volume 48, Issue 2, pp 63-80

Massachusetts Institute of Technology (2014) *MIT $100K Entrepreneurship Competition*. http://www.mit100k.org/

NCSU Libraries (2014). *WolfWalk* | NCSU Libraries http://www.lib.ncsu.edu/dli/projects/wolfwalk

Sierra, T. and Wust, M. (2009). "Towards Mobile Enhanced Digital Collections", *The Second International m-Libraries Conference*, Vancouver, BC, Canada, June 24, 2009. http://www.lib.ncsu.edu/documents/dli/projects/wolfwalk/docs/mlibraries-2009.ppt

Wildemuth, B. (2009). *Applications of Social Science Research Methods to Questions in Information and Library Science.* Westport, Conn: Libraries Unlimited.

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Appendix 1: Competition Rules

1. Participants must be undergraduate students 18 years of age or older currently enrolled at the University of Illinois at Urbana-Champaign and eligible to receive payment according to applicable laws and University policies and procedures.
2. Participation in the contest is voluntary.
3. Current or past University of Illinois Library employees (student or staff) are not eligible for participation.
4. Applications must be received by 5:00 p.m. Monday, December 3rd, 2012.
5. The contest will run until March 29th, 2013, and will culminate in a short presentation to a panel of judges. The judges will choose first, second, and third-place winners. All prizes are split evenly among team members. The first place team receives $750, the second place team receives $500, and the third place team receives $250.
6. The app designs (or "design ideas," or "design concepts") shall be original work and shall not infringe on any intellectual property rights of others including copyrights and trademark rights.
7. By submitting app designs, teams give the competition judges the right to evaluate and compare your design against the designs of others in order to choose winners of this design competition.
8. Team members must be present for all mandatory meetings, as specified in the Student Information Packet.
9. **Requirements:** All app designs must be submitted by teams formed during the orientation sessions of the competition. No entries from individuals will be accepted. All app designs must demonstrate a clear benefit to the Library and its users, and illustrate ways to improve student access to library collections, services, and/or facilities. Final team submissions must include the following information:
    - Name of App
    - "Pitch" statement – 2-3 sentence overview describing app and how it will function
    - Short (1-2 sentence) biographical statement for each participant, stating name, major/college, and role on team
    - Problem app is designed to solve, including evidence for the need for the app
    - Audience for the app
    - Mock-up of the App in action, including sketches or other visual representations of the app in use during a typical interaction
    - Example use cases for the app
    - How and why the app will improve student access to library collections, services, and/or facilities.
10. **Ownership:** Mobile applications designed as part of this contest will become the property of the members of the team designing the application and the University. All participants will, as a condition of participation in this competition, agree to assign to the University of Illinois a co-ownership interest in any and all contributions to the mobile application, including any powerpoints, descriptions, text, images, photographs, videos, audio, design and code. Participants will be required to sign the Assignment Agreement (there was nothing after "sign the". I assume it was the Assignment Agreement that needed to be inserted here?)
11. **University Rights to Mobile Applications:** As co-owners, participating teams of this design competition (both enrolled groups and chosen participants) and the University of Illinois (including the University of Illinois Library), each have the free right to use, copy, distribute, and modify their app design, and authorize others for any and all purposes (including educational, promotional, and commercial purposes) without further compensation to the entrants. For University, this includes, among other possibilities: release as open source, where it is adapted and customized by local implementers over time; deployment through University's mobile developer accounts for the Apple or Android distribution markets; or incorporation as part of a global code module system.
12. **General Conditions:** The Library in its sole discretion may disqualify and refuse to accept any app design for any reason, including, but not limited to offensive or false content, violation of any third party right, or violation of contest rules. All decisions made by the Library and the University of Illinois are final and without recourse for appeal.
    Participants shall be solely responsible for all costs associated with production of the Concept and the entry process. Each participant shall indemnify University of Illinois and its trustees, employees, agents and representatives from any claim, loss or liability, including all associated costs, expenses and attorney fees, arising from the app design submitted by the participant.
    The University of Illinois shall not be liable to participants for illegible, damages, lost, late or misdirected entries. The

University of Illinois' liability shall be as provided by Illinois law. The University of Illinois does not waive any legal defenses or immunities under these contest rules.

13. **Use of Library Data and APIs:** The Library grants participants the right to use Library data sources and APIs as (inspiration/ part of their app concept and design. This right expires at the end of the competition.
14. **Originality:** By submitting a design for consideration, you declare that you are the sole creator of the design and the design is original and does not include any third party content, except for the use of University or Library owned trademarks and/or APIs/data sources within the design.
15. Additionally, **all** participants will have an opportunity to receive a $10 gift certificate for sharing their thoughts on the competition experience with the event organizers (through an interview).
16. Results from interviews or the project may be disseminated in journal articles, conference presentations, and/or scholarly book chapters and in websites. Ideas from the competition may be developed into apps by the Library. Additionally, results and articles may be deposited in the Library's Institutional Repository (IDEALS).

Appendix 2: Tables

Table 1: Timeline

Dates	**Event**	**Mandatory**
Oct 23 2012 to Nov 30 2012	Student registration via on-line form	Yes
Dec 5 2012 to Dec 19 2012	Students sign ***Assignment Agreement*** and ***Informed Consent form for Student Competition***.	Yes
Jan 24 2013	Orientation Session	Yes
Jan 26 2013	Walking tour of campus	Minimum 50% of each team required
Feb 11, 13 & 14 2013	Presentation Review Sessions	Minimum 50% of each team required
Feb 21 2013	Final Presentations	Yes

Table 2: Judges' Evaluation Rubric

Criteria	**1**	**2**	**3**	**4**	**5**
Clearly identified connection to library services, collections, and facilities					
User experience/design layout					
Originality/creativity					
Clear identification/explanation of the need for the app and problem(s) it addresses					
Evidence that the app addresses student interests and needs					
Integration of identified library/3rd party data sources					

Appendix 3: Mobile app mock-ups

Image 1.

Image 2.

Image 3.

Image 4.

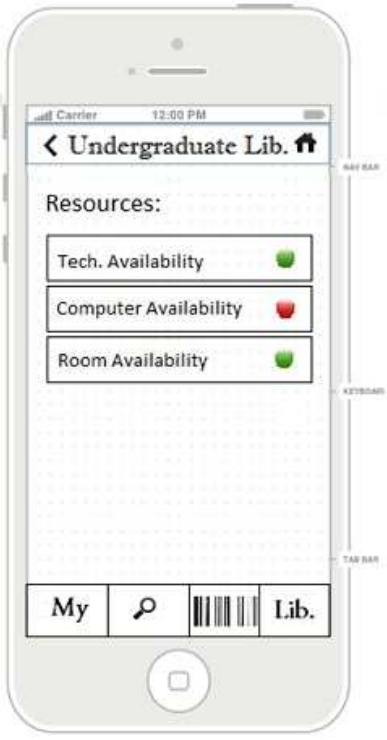

Image 5.

Image 6.