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Ilana Stonebraker

Purdue University, stonebraker@purdue.edu

Tao Zhang

Purdue University, zhan1022@purdue.edu

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Crowdsourcing Reference Help: Using Technology to Help Users Help Each Other

Ilana Stonebraker and Tao Zhang

Introduction: What is Crowdsourcing in Libraries?

Crowdsourcing has recently been defined as an “online distributed problem-solving and production model that leverages the collective intelligence of online communities to serve specific organizational goals.”¹ Crowdsourcing encourages users to participate in knowledge creation with other members of their academic community. In both the library and public contexts, crowdsourcing has emerged as an effective model for incorporation of new ideas and perspectives. We have developed a crowdsourced reference system, CrowdAsk, in order to provide additional useful information for students and assist in fulfilling our mission as librarians to educate and encourage an information literate and informed populace. By helping users help each other, we solidify our relationship with our expert users as well as better serving non-expert users of the community.

Crowdsourcing was first coined in 2006, and is derivative of the term outsourcing.² Within libraries, crowdsourcing has become an effective means of leveraging online collective intelligence to transcribe and catalog numerous items. One of the examples is the New York Public Library’s (NYPL) 2011 “What’s On the Menu?” project. With assistance from an IMLS Sparks! Ignition Grant, the NYPL utilized its online user base to transcribe 9,000 restaurant menus.³ The crowdsourcing concept spanned multiple similar ar-

chival transcription projects including the Australian Newspapers Transcription Project and Family Search Indexing, among others.

We believe that a similar model of utilizing collective intelligence can be implemented in libraries’ reference workflows. While our websites grow, the traditional model of librarians passively waiting for users to seek help while most users find help outside libraries, has not changed. Users, especially students, tend to seek reference help from faculty advisors and their peers. This kind of knowledge sharing does not have a well-structured platform within the library environment and expert knowledge is not well utilized, especially for experts outside traditional library roles. There have been some efforts to create searchable help content, but adding new questions and answers, as well as validating and updating answers that may be out of date, inevitably takes up librarians’ valuable time.

This paper examines the various ways crowdsourcing help can provide academic users with quality answers and engage users with libraries in ways previously not administratively or technologically possible. Through crowdsourcing, libraries can bring new perspectives to problems. CrowdAsk is a crowdsourced questions and answers system for library help developed at Purdue University Libraries with support from an IMLS Sparks! Ignition Grant and is openly available at <http://crowdask.lib.purdue.edu>.

Ilana Stonebraker is Business Information Specialist and Assistant Professor of Library Science at Purdue University Libraries, e-mail: stonebraker@purdue.edu; Tao Zhang is Digital User Experience Specialist and Assistant Professor of Library Science at Purdue University Libraries, e-mail: zhan1022@purdue.edu

We draw on our experience with CrowdAsk to discuss how crowdsourcing could be implemented for library reference help successfully. Our hope is to inspire others in librarianship to engage in the growing participatory culture and collaborative problem solving with their patron communities to create better and more contextual reference help systems.

Why Should Academic Libraries Engage in Crowdsourcing Reference Help?

There are three major benefits to crowdsourcing reference help: optimizing workflows for improved reference, gathering expertise and new perspectives not available in the libraries, and finally because academics already involved in crowdsourcing projects are good communities for crowdsourcing. We will describe each of these benefits below.

Crowdsourcing increases library reach and fulfills our library's mission of providing help to users. The majority of reference questions received are lower-level and could be answered by a number of stakeholders, including other students in the same class or graduate students in the same academic department. Questions are all treated alike in current digital reference systems and not context-based. This process of reference decontextualizes questions and librarians have to add context back into questions in order to share the questions and answers. There is a lack of utilization of other information sources such as graduate students and course instructors. Modern academic librarians juggle administrative responsibilities and are constantly expanding deeper into university initiatives. Crowdsourcing frees librarians up from answering lower level questions so they can help users with their research strategies. Additionally, academic users, especially students, keep different hours and often ask questions late at night that need immediate answers that can be provided by other library users.

Engaging experts outside the libraries has many benefits besides eliminating reference librarian backlog. Students are often experts in their own courses and know their instructors' syllabi and instructional

style. Graduate students engage in intensive research projects and may have a better understanding of databases than a generalist librarian. University alumnae and hobbyists interested in university history can answer each other's questions as well.

Aside from possible individual expertise, library users may answer questions better than librarians themselves, due to their outsider nature to library services. Studying creative problem solving by outsiders, Lakhani conducted a statistical analysis of the InnoCentive Service between 2001 and 2006. InnoCentive.com is a crowdsourcing site where companies post problems, mostly lab-based, for the crowd to solve. Not only were users able to solve 29 percent of the intensive lab-based questions, there was a positive correlation between the distance of their fields of expertise of the "Solver" from the problem's field and their likelihood of being able to solve the problem. The further the self-assessed distance the user was from the domain or discipline, the higher likelihood they had in solving the problem from a new perspective.⁴

Beyond answer producing, users can also benefit help systems by continuing posing questions, which enriches the help system with more sophisticated questions, as has been done in computer science research. To test the power of distributed problem solving, a group of computer scientists prompted users to answer questions about obesity, hypothesizing that users could more accurately develop predictive questions based on their own experience. For example, the researchers would ask questions such as "How many times a week do you eat fast food?" In turn those users proposed new questions for future users based on their own behavior such as "How many times a week do you have a meal after midnight?" and "Do you have a college degree?" These questions evolved in sophistication over time and became predictive of the behavioral modeling, more accurately predicting Body Mass Index than researchers' original questions. This shows that users familiar with their own behavior could ask better questions.⁵

Crowds are our own academic and professional communities. For organizations, there is an ongoing

romantic myth of the crowd as a group of unknown amateurs, irrational and uncontrollable. The reality is quite different. The majority of people who participate in crowdsourcing are academics and professionals in the field looking for new challenges and to give back to the community. In a 2007 survey of 651 iStockers (people who contribute photography to the crowdsourcing site iStockphoto), 47 percent of participants felt that the term “professional” (the most popular choice) most accurately described them in terms of their creative talents, with “hobbyist” the second most common (23%) and “amateur” the third most common (14 %). They were also well educated: 58 percent of iStockers surveyed had at least a year of formal schooling in art, design, photography, or a related creative discipline; 26 percent had more than five years of school; and 44 percent had more than five years of paid artistic experience.⁶ It isn’t just photographers. Sixty-five percent of “Solvers” on InnoCentive.com held a doctoral degree or higher, with another 20 percent holding some advance degree other than a doctorate but above a bachelors.⁷

The Importance of Crowdsourcing to the Academic Community

We found that the students who used CrowdAsk frequently ranked reciprocity and community over extrinsic motivations like badges and points. Those expert users of CrowdAsk described their main motivation as wanting to help others. Reciprocity is an important aspect of participatory culture. Henry Jenkins describes participatory culture as one with “support for creating and sharing one’s creations” and one “which members believe their contributions matter, and feel social degree of social connection with one another.”⁸ Participatory culture is a critical aspect of metaliteracy, which is a core aspect for the framework for information literacy. Relate to participatory culture, the most final draft of the ACRL Framework for Information Literacy call for more attention on the “vital role of collaboration” including wikis and digital communities and their “potential for increasing student understanding of the processes of knowledge

creation and scholarship” and refers to metaliteracy as a main influence.⁹ CrowdAsk encourages users to participate in knowledge creation with other members of their academic community. Inside and outside the classroom, CrowdAsk supports student-centered active learning.

Rather than replacing or improving existing digital reference models, CrowdAsk is focused on reimagining library help for our users. Users are becoming more comfortable in Web 2.0 systems like Wikipedia, Facebook, and YouTube where user-generated content is the norm. Our current reference systems disenfranchise our expert students, allowing them only to act as passive information gatherers and not authoritative sources in their lives. CrowdAsk supports student-centered active learning and it could be viewed as instructing through enlightenment and enfranchisement: listening and supporting online communities of experts.

CrowdAsk: Assessment of a Crowdsourced Library Help System

CrowdAsk (Figure 1) allows users (particularly undergraduate students) to ask and answer open questions related to library resources, services, and instructions. When developing CrowdAsk, we took an explicitly user-experience-centric and reference-centric standpoint on crowdsourcing. CrowdAsk provides librarians and users with an online, community-driven, and persistent help information source. Users on CrowdAsk receive research help from not only librarians, but also a community of researchers with expertise and shared interests. They were motivated through a variety of gamification means (i.e., points, bounties, levels, and badges).

In the spring 2014 semester we implemented CrowdAsk with three undergraduate courses at Purdue University, including English 106, Management 175, and General Studies 175. In total these three courses included 12 class sections and over 370 undergraduate students. We introduced the system to the students at the beginning of semester and frequently encouraged students to use CrowdAsk in the

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FIGURE 1
Homepage of CrowdAsk

CrowdAsk is a question and answer site for academics, librarians and students. We are working together to share knowledge and answer questions.

[Get Started](#)

Ask a Question

Anyone can answer...

Vote for the best one

Recent questions and answers

0 votes	0 answers	4 views	<p>What are we supposed to do for assignment 2? Like do we use our company from assignment 1?</p> <p>asked 1 day ago in MGMT175 Spring Section 2 by Eric Sterling Chu (830 points)</p>
0 votes	1 answer	12 views	<p>So what do we have to bring into class tomorrow?</p> <p>answered 3 days ago in MGMT175 Spring Section 2 by Kyle L Dickelman (330 points)</p> <p>management</p>

If you have a question, comment or suggestion about your experience on CrowdAsk, we'd like to hear from you.

[Give us your feedback.](#)

[All categories](#)

classes when they needed help researching a topic. We added the link to CrowdAsk in the course management system as part of the course resources.

Data from Google Analytics showed the total number of page views was 14,715, with average 12.8 pages per visit. The average visit duration was 6 minutes and 7 seconds. This shows that CrowdAsk attracted a good amount of traffic from the classes. Users were engaged with CrowdAsk as they stayed and viewed some amount of pages for an average visit. Preliminary analysis of the question titles and answer texts showed that users asked the following categories of questions on CrowdAsk, ordered by their frequency (Table 1). More information is available in our IMLS white paper report of the year-long project.¹⁰

We also collected user feedback on CrowdAsk through course evaluations. In general, students liked the idea of asking questions and helping each other on CrowdAsk, without emailing teachers all the time.

The above usage data and evaluation findings indicate that CrowdAsk could be an effective tool to meet users' information needs beyond traditional library reference help. Users have asked various types of questions and reached high levels of scores and badges in a relatively short time period. We have now integrated CrowdAsk into our digital references workflows as a core service.

From our CrowdAsk project, we learned three key lessons for the library community. First, it is important to learn from the successes of other crowdsourcing projects. We studied the Stack Exchange site quite heavily, often learning towards their design whenever possible. Second, echoing Jenkins, mentorship and reciprocity are very important in crowdsourcing communities. Instructors were very much interested in making rank very clear, and students often worked together to solve questions, exchanging comments and follow-up questions. Expert users became experts

because they wanted to help intrinsically, rather than be ranked highest or have the most badges. Finally, community is extremely important when working with your patrons in crowdsourcing. Crowdsourcing is a partnership. Knowing your users well before you start the process aids in crowdsourcing success.

Conclusion: Helping Users Help Each Other

Simply put, crowdsourcing is a top-down and bottom-up sourcing of solutions for business and institutions to enhance existing services. Crowdsourcing is more than social media outreach. It is engagement in open problem solving to serve institutions' specific needs through a passionate community. We live in an information ecosystem where a trip to the reference desk might not be the first or the preferred help method for library users. In crowdsourcing, the "locus of control regarding the creative production of goods and ideas exists between the organization and public, a shared process of

bottom-up, open creation by the crowd and top-down management by those charged with serving an organization's strategic interests."¹¹ Our goal of developing CrowdAsk was to develop sustainable user engagement and community involvement as part of the Purdue University Libraries website. Our libraries all have communities which we serve, but not all of us have communities with which we collaborate. Crowdsourcing is one step towards a library that not only lends information, but shares information with its users in partnership.

Acknowledgment

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Notes

1. Brabham, *Crowdsourcing*.
2. Howe, "The Rise of Crowdsourcing."
3. "What's on the Menu?"—From Software to Funware at The

TABLE 1
Categories Of Questions On CrowdAsk

Question Category	Definition	Example Questions
Course-related	Questions that ask for information about particular courses.	"Do you know how to retake the quiz on blackboard (for Management 175)?" "How much will my writing improve throughout the semester?"
CrowdAsk-related	Questions that are about the point system, badges, and type of questions on CrowdAsk.	"How do you earn points on CrowdAsk?" "May I know the full list of badges and how to achieve them?" "Are we only allowed to ask academic-related questions here?"
Library services or resources	Questions that are about where to find certain information and how to access physical and electronic resources.	"Is there a way to search the libraries catalog just for movies?" "How do I reserve a study room at library?" "How do you get the actual article to come up on Business Source Premier instead of just the abstract?"
How-to	Questions that ask for instructions.	"What is a good website to use to do a voiceover on Prezi?" "How to analyze the financial tables of a company?"
Conceptual	Questions that are conceptual, abstract, and do not involve specific contexts.	"What is the best citation management software?" "Could someone tell me what is the meaning of APA citation?"

New York Public Library IMLS Project Number: LG-46-11-0080-11.”

4. Lakhani et al., *The Value of Openness in Scientific Problem Solving*.
5. Bongard et al., “Crowdsourcing Predictors of Behavioral Outcomes.”
6. Brabham, “Moving the Crowd at iStockphoto: The Composition of the Crowd and Motivations for Participation in a Crowdsourcing Application.”
7. Lakhani et al., *The Value of Openness in Scientific Problem Solving*.
8. Jenkins, “Confronting the Challenges of Participatory Culture: Media Education for the 21st Century. An Occasional Paper on Digital Media and Learning.”
9. “ACRL Information Literacy Framework for Higher Education.”
10. Zhang and Stonebraker, *A Crowdsourced Library Help System*.
11. Brabham, *Crowdsourcing*.

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