ABSTRACT
Online question-answering (Q&A) services are becoming increasingly popular among information seekers. We divide them in two domains: social Q&A (SQA) and virtual referencing (VR) and ask what the demands and expectations are for both in satisfying information seeking needs. Using more than 30 interviews and their qualitative analysis of both experts (librarians) and end users (students), we present our findings that indicate the mismatch in experts’ and end-users’ understanding of how and when each service should be used. More importantly, we show how SQA and VR differ in their functionalities and offerings, commenting on their pros and cons, and the ways in which one could create better hybrid solutions for online Q&A services.

Keywords
Online Q&A; Virtual referencing; Social Q&A.

BACKGROUND
Social Q&A (SQA)
Social Q&A services are community-based, and designed to support people who desire to ask and answer questions by interacting with one another online. People ask questions to the public and expect to receive answers from anyone who knows something related to the questions, allowing everyone to benefit from the collective wisdom of many. In essence, social Q&A enables people to collaborate by sharing and distributing information among fellow users, and by making the entire process and product publicly available. This encourages users to participate in various support activities beyond question and answer, including commenting on questions and answers, rating the quality of answers, and voting on the best answers. Within the past few years, various types of social Q&A services have been introduced and researchers have begun to evidence interest in information seeking behaviors within these contexts. The most popular examples of social Q&A include Yahoo! Answers (http://answers.yahoo.com/) and AnswerBag (http://www.answerbag.com/). The advantages of this approach are the low cost (most services are free), quick turnaround due to large community participation, and easy build-up of social capital. On the other hand, there is typically no guarantee regarding the quality of the answers. The asker is simply relying on the wisdom of the crowd.
Virtual referencing (VR)
Since the ultimate purpose of a library is to serve as an intellectual commons for the entire populace, it becomes important to implement VR technology to enable resource sharing and communication across physical confines as well as adapt to the preference in use of technological channels to seek information. Some of these norms and values that guide best practices in VR include: affective characteristics of the librarian, timeliness of responses and the accuracy and completeness of the information retrieved. VR should be evaluated as a service, rather than based on the individual metrics that comprise any singular reference interaction. Therefore socio-affective factors comprising the interaction, such as politeness and even timeliness of response, which indicates direct engagement on behalf of the information provider, must be valued to the same degree or at an even higher degree as the qualities that should comprise the ultimate nature of the information provided to the end user. A reflection of the importance of these factors can be found from our subject expert interviews, discussed in more detail later on in this paper.

STUDY-1: INTERVIEWING THE EXPERTS
We interviewed 10 reference librarians from Rutgers University representing multifaceted subject areas including the liberal arts, the arts, sciences and business disciplines. Each librarian is a subject specialist, meaning they have not only a Masters in Library Science, but also a secondary Master’s degree and/or Ph.D. Librarians interviewed provided a mixture of face-to-face and electronic (both synchronous, i.e. chat, and asynchronous, i.e. email, based referencing). Since this is a pilot study, experts were selected using convenience sampling. Going forward, further study is required to gather a more representative sample not only from within the context of academia, but also from other areas within librarianship. However, the current findings provide a compelling initial glimpse into what experts perceive as the abilities of VR and SQA to answer different types of questions and their recommendations for when each should be used when engaging in information behavior.

Summary of Findings
Thinking about information seeking and retrieval within an academic context, there are certain features that characterize “good” information. Experts interviewed identified timeliness, quality, accuracy, scope, depth, cognitive requisite and access as important aspects in assisting students to use multiple peer-reviewed sources in formulating a cogent argument. Factors such as efficiency, timeliness, and access seemed to carry the most importance over virtual media, while more affective characteristics were ranked higher within a face-to-face environment. Experts identified the advantages of a virtual platform as providing convenience in terms of proximity (e.g. distance learners did not have to travel to the physical location), timeliness (e.g. the perception of a quick turnaround and instant availability of electronic sources) and access (e.g. disabled students who may have a hard time either traveling to the library or communicating with the staff), all of which encourage a more diverse and populous group of patrons to utilize library resources and services.

Another important finding was that experts interviewed value the quality of the service provided at the same level or even above giving the “right” answer. Their goal is to provide students with the necessary tools to not only identify quality information that is comprehensive, but also to be able to apply search strategies used by the experts when seeking information independently. “We realize that we might not see the student again,” said one expert. “So while we have their attention, we want to make sure that we provide them with tools they can use again and again to get the necessary information to produce the caliber of work expected of them from their professors.” The importance of providing effective search strategies consistently within VR was addressed, to the point where a significant proportion of librarians interviewed lamented digital media due to their perception that it impaired their ability to convey these strategies due to the demand of rapid delivery of information by students. They also expressed frustration in the concurrent inability to provide other value added services, such as simple politeness inherent to a face to face interaction or visual cues from the asker that shape their intuition of a user need and further facilitate effective searching.

Most experts expressed a lack of familiarity with SQA sites; they could identify the general purpose of SQA sites, but were unaware of the scope of material they covered. From their understanding of SQA, experts agreed that these sites were best used for ready-reference questions, which have fact-based answers, since these could be retrieved quickly and conveniently by the end-user.

STUDY-2: INTERVIEWING THE END-USERS
We interviewed 24 undergraduate students from Rutgers University. As in the experts portion of the study, convenience sampling was used to obtain these students by offering extra credit for those who volunteered to participate in the study. Students who volunteered only were selected as participants if they could identify past use of and/or experience with an Online Q&A platform(s). Further study using probabilistic sampling techniques is required to determine whether findings from this study can be generalized to undergraduate students as a group.

Summary of Findings
Students interviewed identified familiarity with the source, accuracy, topicality and answer length as the most desired components that comprise the information they seek. Unlike the experts, students interviewed did not seem to recognize the difference between functions of SQA and VR. In fact, most identified a lack of awareness of VR and were divided on use of the library’s electronic resources to find information. Students who identified use of these resources often had taken a class where the professor
required a library instruction session on how to locate articles and books via electronic databases. Students reported that the sessions were helpful and motivated them to use electronic resources provided by the library to satisfy their information seeking needs.

Almost all of the students interviewed cited Google as the predominant outlet from which to find information both in general and within an academic context. They stressed that their familiarity with Google and its search interface played a large role in their extensive use. The majority of students did not use Online Q&A sites to post a question, and none reported ever having used the site to answer a question. Rather students would input a natural language query into Google and look for the result on the first page that had the “most bolded” words from their original question. Since Online Q&A sites are operated by humans, natural language queries are most abundant from these sites and therefore, results from a page such as Yahoo! Answers appear high among the search rankings since they contain the option most visibly on topic with the student’s original query. A few students reported posting a question to an Online Q&A site that had not been previously asked, but none followed-up to see if their question had been answered because they wanted to avoid a waiting period. Instead, they looked for another source using Google as a search engine. Students also expected an answer that was on topic, and generally did not want this source to provide any extraneous information (e.g. links to other sources, additional information outside of the question scope) aside from a fact-based answer that directly addressed their question. It follows that students also appreciated a shorter answer length.

Students also viewed accuracy as an important factor, manifested by their desire, as explicated by one student, to “...try out the answer for myself.” Most students reported using the sites to answer fact-based questions and initially would verify the veracity of the answers provided before becoming frequent visitors of the site. A very common example was conveyed by one student, who Googled a Chemistry problem and clicked on Yahoo! Answers since it appeared as one of the first results on the page. She then worked through the Chemistry problem herself, using the answer set provided by a Yahoo! Answers user and found that the answer was correct. After performing this verification with a few more Chemistry problems, the student began to visit and trust Yahoo! Answers more often when it was displayed within the Google results. This latter part is important to note. Almost all of the students reported visiting Online Q&A sites via Google, rather than inputting the URL for the Online Q&A site of their choice.

Unlike the experts, students interviewed did not value socio-affective qualities in an answer. Criteria such as familiarity with and personality of the authors were not viewed as important. Students did not seem to feel it necessary to personally identify with the information sought; rather they wanted the information to first “answer” their query and viewed any additional criteria present as an added bonus, rather than essential for evaluating the “goodness” of information received.

**COMPARING SQA AND VR**

On one hand SQA and VR can be seen as special cases of online Q&A, and on the other hand they are considered apples and oranges, making it difficult to compare them. There is some truth in the difficulty for matching SQA and VR; they are often meant for providing very different services. For instance, homework-related questions are encouraged on VR since a librarian could help the student learn how to search for appropriate information as well as evaluate found information, instead of simply providing an answer. Such questions, if detected, could get flagged in SQA sites such as AnswerBag (Gazan, 2007). This is due to the fact that most SQA questions attract to-the-point answers rather than the process of finding those answers, and the askers of homework questions are considered “lazy”, or as Gazan (2007) defines, “sloths”. This attitude of not appreciating the learning aspect of information seeking and expecting a direct answer was also found in the subjects we interviewed in our study-2. Such fundamental differences in askers’ expectations and answerers’ motivations make it hard to compare SQA and VR directly. One way to address this issue is through further research that creates a list of characteristics of information that could best be fulfilled through each platform. This list could then be used to analyze a question and generate a recommendation of which service (VRS or SQA) would be a better fit to answer that question.

Despite this difficulty of comparing SQA to VR, an increasing number of researchers and practitioners in the field of Library & Information Science (LIS) have been attracted to the idea of bridging them. For instance, Mon & Randeree (2009) explored the impacts of SQA-like technologies in the library world. According to Gazan (2011), SQA features such as persistent online identity, aggregate user ratings of past answers, and room for both factual and conversational interactions could benefit VR librarians.

One of the interesting facts we learned from our studies is how both experts and end-users value various aspects of question-answering. While the experts (e.g., librarians) attempt to find an accurate and comprehensive answer with appropriate citations, the end-users tend to value speed and short answer length more. Due to this, and one-to-one nature of VR interactions (as opposed to one-to-many in SQA), librarians face tough challenges to keep the VR users satisfied and engaged. Shah et al. (2008) compared Google Answers, an expert-based VR, and Yahoo! Answers, an SQA, and provided interesting insights into why Google Answers failed. The central message was that without quick enough response and critical mass, it is very difficult for a Q&A community to thrive. Shah (2011) shows that a majority of questions on Yahoo! Answers receive an
answer within just a few minutes, as opposed to hours and days for many VR questions. All of these may seem disappointing for VR, but in the same article (Shah, 2011), the author shows that it takes much longer for a satisfying answer to arrive. In other words, a quick response in a few minutes followed by a satisfying answer in a few hours/days kept the users of Yahoo! Answers connected and overall satisfied. As we discovered from our interviews, VR librarians often tend to hold on to an incoming question and try to work hard to formulate a really good answer (Brown, 2008). It may benefit, in the meantime, to start communicating with the asker providing quick responses and even partial answers to keep them engaged.

In regard to the future of libraries within this new information-seeking context, it appears that students desire independence in their information seeking and retrieval. Students expressed a reticence to consult a reference librarian for any help outside of information retrieval (e.g. they have the call number of a book and want to know its location). However, students who were taught search strategies to use the library databases to find articles reported a general satisfaction with the library instruction session, as well as continued use of these services even after the class that required them was over. This suggests that students might not be shying away from the library as a resource, provided that the library can change with them and function as an extension of the students' valued and perceived sense of autonomy in the information seeking and retrieval process.

CONCLUSION
Online information seekers are becoming more sophisticated in posting their search requests, leading to a paradigm shift in information seeking with the increased use of question-answering (Q&A) services in recent years. In this paper we looked at two parallel Q&A services, viz., social Q&A (SQA) and virtual referencing (VR). We realized that while these two are often considered difficult to compare, they both have different factors and attributes that could prove complementary and assist in the student’s information seeking. Using interviews with experts (librarians) and end-users (students), we attempted to look at both sides of the online Q&A coin, hoping to compare SQA and VR at some level.

We found that the users and experts sides do match in regard to topicality and validity in the sense that students value information that is accurate and will often test the veracity of answers provided to them on a Social Q&A site; this may also be why students interviewed only indicated information seeking behaviors of looking for fact-based information online. If they could verify the truth to an answer, or at least had the opportunity to verify if desired, they exercised a propensity toward Social Q&A. Students who indicated participation in library instruction sessions emphasized continued use of search strategies learned to find resources that were more in-depth and on-topic with their information need. This falls in line with the experts' similar indicated value of these two attributes and the noted success of the library instruction sessions suggests that future study should be completed to further analyze the effectiveness of these sessions in aligning user and expert information behaviors, as well as to examine the efficacy of these services across different platforms (e.g., virtual vs. face-to-face, and expert-based vs. peer-based).

ACKNOWLEDGMENTS
This work reported here is supported by the OCLC/ALISE Library & Information Science Research Grant.

REFERENCES


