GUIDING USERS TO THE RIGHT SOURCES VIRTUALLY

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Absract: *This is a case study to explore the practices of reference services at a university library. The study is conducted to understand more about the current practices of reference services, particularly through electronic mediums at the campus, to identify issues faced by the librarians in supporting those users' demands, and to provide several recommendations. The study has revealed that the services they provide through electronic mediums to users can be improved to reduce manual management of questions and answers between the librarians and users. Some of the questions that the librarians receive everyday from their users could be avoided if proper database systems are available to store them for future retrieval. In addition, the library needs to revisit their policy and processes related to reference services to support virtual reference services. Reference librarians should give equal attention to enquiries directly from e-mails as they would give to enquiries directly from users at the reference desk. They also need to be well-trained and competent in using social media tools to take full advantage of the benefits offered by these technologies. The study has also resulted in the development of a system prototype to support virtual reference services.*

Keywords: *Virtual reference service, Reference service, Academic library, Librarian, University library*

INTRODUCTION

Reference services may vary from library to library, but most libraries have an information or reference desk where assistance from a librarian is available. Almost all

libraries also provide reference services via the telephone and in many libraries you can e-mail your reference question, or ask a librarian, to a reference librarian who will e-mail you back with the answers. University libraries or academic libraries are faced with challenges on several elements such as reference services, online information providers, and e-learning products. As a result, the creation and delivery of services to their users, mainly the academic staff, researchers and students, become more challenging. With the advancement of information and communication technology, the scope of librarians' responsibility progresses into becoming more complex. It also changes the way user search and use information whether for personal or educational purposes.

The purpose of this study is to understand more about the current practices of reference services, particularly through electronic mediums at the campus, to identify issues faced by the librarians in supporting those users' demands, and to provide several recommendations.

METHODOLOGY

The study uses a case study method, which describes a single situation, and involves a collection of a large amount of qualitative information. A case study is a research method that facilitates "a deep investigation of a real-life contemporary phenomenon in its natural context" (Newman, 2011; Yin, 2012). It is also appropriate because through the experience and problems they encounter on a daily basis that librarians can understand which processes require improvements (VanScoy, 2010; Nicol & Crook, 2013; Shaw & Spink, 2009; Xu, Kang, Song, & Clarke, 2015; Yang & Dalal, 2015). The study is focused on exploring within a context—the HM Library reference services. Although HM Library operates under the main library, their issues and problems are rather different. Hence, in this study, a series of informal contacts were conducted over a week period with the librarians of the library via face–to–face, emails and telephone conversations. Access was also given to view several reports generated by their reference desk system.

REFERENCE THEORIES

Due to the complex nature of librarianship, librarians must understand theories behind reference work to enable them to practice their discipline (Vavrek, 1968; Hollers, 1975; Rettig, 1978; Wagers, 1978; cited in Danner, 1983). Table 1 below shows several definitions of reference work.

Table 1: Definitions of reference librarians' work

Green (1876) cited in Saxton (2000)	"personal intercourse between librarian and readers"
Dana (1920) cited in Saxton (2000)	helping users would be a central function of librarianship that people could be trained by librarians to arouse their "inquiring spirit"
Kroeger (1908) and Learned (1924)	a librarian should go beyond the local resources to assist the users
Wyer (1930) cited in Saxton (2000)	"it still is, and always will be, imperative to provide human beings as intermediaries between the reader and the right book"
Rothstein (1961)	defined reference work as "the personal assistance given to individual readers" and reference service as "the responsibility and organization of a library to prepare for this work"
Rees (1966)	identified reference service as "the actual provision of assistance" and reference work as "the library function performed by reference librarians in providing that service"
Rees (1966)	added reference process to describe the complexity of librarianship that involves psychological, sociological, and environmental variables
Wyer (1930) and Rothstein (1961) cited in Danner (1983)	identified the levels of service of reference works
Katz (1969) and Nielsen (1982) cited in Danner (1983)	argued about the role of reference librarians, whether or not they should provide users with direct answers or let them find on their own, also known as "information versus instruction debate"
Rettig (1978) cited in Danner (1983)	based the theory on the librarian's role as a "communicator" and defined reference service as, "Interpersonal communication process, the purpose of which is to provide a person who needs information with that information, either directly by culling the needed information from an appropriate source (or sources) or indirectly by (1) providing the person with the appropriate information source(s) or (2) teaching the person how to find the needed information in the appropriate information source(s)."
VanScoy (2010)	introduced a new approach by identifying personal theories of practice and as librarians gain more experience and reflect on the practice, they could develop sophisticated informal theories about reference service

VIRTUAL REFERENCE SERVICES

In response to the growth of virtual reference services, the Reference and User Services Association of the American Library Association (2004) introduced guidelines to implement and maintain virtual reference services. Here, virtual reference is defined as: "Reference service initiated electronically, often in real-time, where patrons employ computers or other Internet technology to communicate with reference staff, without being physically present. Communication channels used frequently in virtual reference include chat, videoconferencing, Voice over IP, co-browsing, e-mail, and instant messaging."

In practice, when librarians use the term virtual reference, they could be referring to e-mail or chat, or the use of any number of technologies. Based on literatures, virtual reference could be used when the concept being studied relates to any types of virtual services (Muller, 2013; Nicol & Crook, 2013; Hendricks & Buchanan, 2013; Xu, Kang, Song, & Clarke, 2015; Yang & Dalal, 2015).

BACKGROUND OF ORGANIZATION

The library under study in this paper is referred to as HM Library. HM Library serves in total about 5000 users consist of students, academic and non-academic staff. The library is not a stand–alone library. It operates under the supervision of the main library near the campus. The library is supported by two librarians and eight assistant staff. HM Library operation is divided into five main functions—customer services and collection, journal and online databases, IT services, information services, and administration. Its vision and mission are related to achieving excellence in providing services through physical and virtual means.

FINDINGS

According to a tracer study conducted by the university in 2014, the level of satisfaction of library users towards the HM Library is as shown. Students are generally satisfied with the services provided by the HM Library, as shown in Table 2.

Table 2: Level of Satisfaction Index (2014)

	comfortable and conducive to learning	sufficient resources/materials (books, etc)	sufficient operating hours	library staff service	online resources	online library services	library (facilities and services overall)
Total	4.11	3.97	4.22	4.17	4.16	4.15	4.19

*(Note: 1 = Very Dissatisfied, ... , 5 = Very Satisfied)

Users of HM Library are mostly students from the undergraduate level (75%) and so, they represent the majority of users. They come to the library to use the facilities especially when deadlines of assignments are approaching. Students, especially those in their first to second year of study, are inexperienced in finding the right information timely and evaluating the information for effective use. According to the senior librarian, there are busy days and non-busy days at HM Library. During the busy period, students have to queue and wait for assistance from the library staff. She said that their problems are mostly related to finding sources or references, and using the library and research tools—EndNote, Library Search Engine, OPAC, and so on.

The following tables show the usage of reference desk at HM Library from 2011 to 2014. Data were obtained from a reference desk system and the system was upgraded in 2014. Table 3 shows the reference desk usage—users requesting for assistance from the library staff. Since the upgrade, the reference desk system has several new fields in its reporting feature, as shown in Table 3—live chat, social media, and instant messaging. Only at the

last quarter of 2014 that data for live chat, instant messaging and social media can be extracted. Table 3 shows that users prefer face to face medium than any other medium of reference services.

Table 3: Reference Desk Usage at HM Library

	2011	2012	2013	2014 (Jan – Sep)	2014 (Oct – Dec)
Face to face	11.30%	12.82%	36.70%	20.02%	17.54%
LiveChat					0.00%
Telephone	0.05%	0.15%	0.25%	0.41%	0.25%
E-mail	0.00%	0.00%	0.20%	0.25%	0.05%
Social Media					0.00%
Instant Messenger					0.00%
Fax	0.00%	0.00%	0.00%	0.00%	0.00%
Others	0.00%	0.00%	0.00%	0.00%	0.00%
Total	11.35%	12.98%	37.15%	20.68%	17.84%

Table 4 shows the number of enquiries by subject. The system counts the number of enquiries for each subject—online database, the Internet, digital collection, OPAC, and others. From Table 4, it shows that questions that users ask vary each year, depending on their needs at the particular time. New users come in every semester with different skills and background.

Table 4: Number of Enquiries by Subject at HM Library

	2011	2012	2013	2014 (Jan – Sep)	2014 (Oct – Dec)
Online Database	1.93%	1.61%	6.91%	3.32%	1.12%
Internet	0.86%	0.11%	0.64%	0.75%	0.11%
Digital Collection	0.32%	0.11%	0.11%	0.75%	0.00%
OPAC	1.87%	3.00%	11.94%	5.52%	4.71%
Others	7.50%	10.12%	18.69%	11.84%	6.16%
Total	12.48%	14.94%	38.30%	22.17%	12.10%

Table 5 shows the number of enquiries by enquiry type. There is no significant difference in the number of enquiries by enquiry type each year but there is a trend of an increase in usage of the services. This could mean that students, while asking for research reference, might also be asking about search techniques.

Table 5: Number of Enquiries by Enquiry Type at HM Library

	2011	2012	2013	2014 (Jan – Sep)	2014 (Oct – Dec)
Quick Reference	3.23%	2.90%	7.79%	1.75%	3.23%
Research Reference	3.96%	3.96%	5.21%	0.97%	4.29%
Search Technique	3.73%	3.04%	10.09%	6.41%	5.12%
Advice and Guidance	1.11%	4.52%	5.71%	3.92%	2.76%
Others	0.46%	2.44%	4.65%	6.59%	2.17%
Total	12.49%	16.87%	33.46%	19.63%	17.56%

Users may employ varying strategies to search diversity of materials and resources. The Figure 1 below is a snapshot of individual questions that they ask. The figure shows students use face–to–face medium to ask the librarian and the questions they ask are about searching resources and evaluating them.

Medium	Question	Answer	Date/Time	Duration
Face to face	Analisa kad katalog- susunan by subject, author dll	Done	01-Oct-2013 10:38:36	00:00:58
Face to face	Analisa kad katalog- susunan by subject, author dll	Done	01-Oct-2013 10:39:51	00:01:10
Face to face	Analisa kad katalog- susunan by subject, author dll	Done	01-Oct-2013 10:41:16	00:00:10
Face to face	Analisa kad katalog- susunan by subject, author dll	Done	01-Oct-2013 10:41:16	00:00:14
Face to face	Analisa kad katalog- susunan by subject, author dll	Done	01-Oct-2013 10:41:41	00:00:09
Face to face	Evaluate Jurnal Abtract	Evaluate of format, authority etc	01-Oct-2013 12:52:42	00:01:00
Face to face	Evaluate Jurnal Anstract	Evaluate of format, authority etc	01-Oct-2013 12:53:54	00:00:18
Face to face	Evaluate Jurnal Abstract	Evaluate of format, authority etc	01-Oct-2013 12:54:27	00:00:21
Face to face	buku metadata	Done	01-Oct-2013 13:15:17	00:00:14
Face to face	crai buku metadata	Done	01-Oct-2013 13:20:05	00:00:59

Figure 1: A Snapshot of Individual questions recorded by librarian

Figure 2 shows a sample of questions students have prepared before meeting the librarian on duty. Then, the librarian will provide the relevant sources and reference information that they need, in addition to helping them in using the research tools.

1. Roles and Functional Description of Department
   - Tanya tentang kewujudan setiap department
   - Fungsi setiap department
2. Data-data yang ada
   - Ex: buku,student and staff , *penubuhan*
3. List of Information System
   - Apa system yang digunakan
   - Kalau ada system selain   , explain setiap Information System
      - Apa sub-sub module dalam   ?
      - Adakah refence department di bawah   ?
4. Function of each Information System
5. Types of Module
   - Jenis-jenis module yang wujud dalam system di
   - Explain setiap module

DETAILS OF SELECTED MODULE (REFEERENCE MODULE)
1. Reference module background
2. Functional description and activities of reference module
   - Ada tak flow dalam reference?
   - Penerangan tentang setiap proses/steps
3. Reference module components
   - Input : apa data yang masuk?
   - Processing : apa proses-proses yang terlibat untuk ma
   - Output : hasil yang diperoleh (generate report)
   - Feedback : Macam mana dapat feedback dari user? ,
4. Hardware and Software Configuration
   - Hardware and Software yang digunakan
   - Ada ke vendor atau orang luar yang maintainkan syste sendiri?
5. Reference Module Problem
   - Pernah wujud tak masalah-masalah dalam mengurus

PERFORMANCE OF REFENCE MODULE
1. Strenght and Weaknesses of Reference Module

Figure 2: A Sample List of Questions Students Ask

CHALLENGES

Reference librarians at HM Library, in addition to handling users through the usual face-to-face medium, are also expected to answer enquiries from e-mails and chat. They have other responsibilities outside of information and reference service related activities as well. Due to the time limitations, according to one of the staff, enquiries through e-mails are sometimes overlooked or put on-hold. When this happens, the requests are not recorded into their reference desk system.

Furthermore, the librarian at the reference desk states that sometimes he or she is reluctant to check e-mails or use chat to answer questions. Priority is given to users who come to the reference desk. Students get a faster and immediate response through face-to-face medium. Through e-mails, they have to wait for the response and check e-mails every now and then, and from the answers given, they might have to post following questions. As shown in Table 5, when users ask about research-based questions, they can also ask about searching techniques. To seek for that kind of answers and help, face-to-face medium is more appropriate. In addition, the traditional face-to-face method is preferred because the library is very accessible to students and staff.

Services through social media medium-Twitter and Facebook, are available but are inactive for HM Library. The chat service started in mid October 2014. So far, there was 0% usage for chat and social media. E-mail and telephone usage were also low, almost insignificant compared to face-to-face medium. Although HM Library provides other mediums for users to use the services, they are not utilized. At the time of the study, the library has just started evaluating the instant messaging and social media usage but through manual intervention. Nicol and Crook (2013) identified two main factors that could give positive effects on virtual reference services, (1) the willingness of library

users to use the service and (2) the competencies of librarians to provide quality virtual reference service. They highlighted that the library users' preferences and characteristics affect their use of the service in addition to the importance of support and training for librarians and staff, as well as their enthusiasms while working with virtual reference service.

The reference desk system at HM Library is a centralized system used among librarians at several libraries in the university. The system has a KIV feature that would allow HM Library staff to forward unanswered questions to the main library staff for them to assist, if required. This system still requires them to do manual work to capture requests coming in. To save each request into their reference desk system manually can be overwhelming to the busy staff. Hence, some of the face–to–face as well as the telephone encounters are not recorded in the reference desk system.

When an interaction between a user and a librarian happens, he or she may not be able to take the details and key–in into the system immediately. Sometimes, the details are jotted down during the meeting but are keyed–in into the system later. In some cases when no details are gathered, the data could not be captured at all.

Capture the time as it happens, and produce usage report. But in practice, due to time limitation, the information that was keyed–in into the system had been simplified. Those records could not be as detail as they would like them to be. Their tacit knowledge, which means the answers that they provide to users, is not recorded. The reference desk system is more for collecting data to get usage statistics than for collecting the actual content of the Q&A.

The time stamped for each encounter, when it is recorded, it will not reflect the actual time. As a result, they could not measure response time. The senior librarian stated that a simple form is introduced to ensure all details are captured even if they are not keyed–in into the system, as a preventive measure to data loss. Shaw and Spink (2009) identified several models for virtual reference provision, such as hiring more staff to manage the virtual reference services to release some work load of reference librarians. Steven (2013) and Shaw and Spink (2009) also mentioned the use of an FAQ database. Although it did not represent direct user-librarian communication, it provided examples of effective reference work. At HM Library, when too many students are waiting for assistance at one time, the librarians can get overwhelmed. Some of the questions asked by students are repetitive. This is because in every semester, there will be students taking up the same course. Librarians sometimes have to deal with the same questions every semester and have no record of previous answers that they gave students in the past. Despite the availability of different modes of information and reference services, users as well as librarians are not able to use them effectively. Shaw and Spink (2009) said, developing an FAQ database is the most cost effective decision for libraries and the users can choose which mode to get information from the libraries, stating that *"allowing patrons to use self-service can reduce staff numbers required for a chat or e-mail VR service, and reduce the number of repetitive or straightforward operational questions handled by staff."*

The senior librarian stated that the library conducts information skills workshops continuously to improve information skills of students and staff but they have not been fully utilized. HM Library also conducts library orientation program. According to Carey (1998), in order for students to engage in problem solving tasks, they need a set of skills—using a variety of information, concepts, and rules to arrive at a correct answer, understanding general operating rules and procedures at the resource center, identifying the names and locations of resources, recognizing relevant sources for specific reference tasks, and using the IT facilities.

RECOMMENDATIONS

Academic library users represent diverse background and abilities and their technological competencies and research skills vary widely. By understanding more about their users, librarians can create more meaningful educational environments that meet an individual's current and future needs. Several literatures discussed user centered approach in the library services provision (Baron & Harris, 1995; Wener, 1985; Mills & Morris, 1986). Baron and Harris (1995) stated that library users play an important role to encourage better communication between the users and librarian staff. Wener (1985) and Mills and Morris (1986) earlier had suggested users involvement such that users need a proper "orientation" to their setting or role and they need prior training or briefing in operating the procedures and tasks required.

As the university is moving towards blended learning approach, academic staff is updating their courses in phases to enable blended learning. When policy and procedures change, the systems that are needed to support the functions of that institution will also change (Gellman–Danley, 1997). Reference services at the library need to be IT–enabled in order to support the university. The current administrative systems and institutions should be designed to support them. Online support capabilities include having well–trained staff in using IT–based tools, developing a database system that could capture the incoming requests automatically, and revising process in handling the reference services.

When the appropriate support systems are in place, the library could then evaluate the usage of different modes of reference services. Kwon and Kwen (2010) stated systems' perceived ease of use as well as perceived usefulness have a direct influence on usage of an information system and perceived usefulness facilitates the effect of perceived ease of use on usage (Agarwal & Prasad, 1999; Davis et al., 1989; Jackson et al., 1997; Venkatesh, 1999). Previous studies adopted the Technology Acceptance Model (TAM) for studying factors that determine IT usage (Heinrichs, K. Lim, J. Lim, & Spangenberg, 2007). TAM stated "behavior intention has a high correlation with actual use" (Kwon & Wen, 2010). Therefore, as library users, students should be well-informed with the library services and play their roles as active online library users.

Chu and Du (2012) suggested academic librarians should make informed decisions in applying social media tools. In the study, most library staff agreed on the usefulness of social media, but hesitancy among library staff and limited participation of users were perceived to be the hindrances. In another study, while social media seemed to have

benefitted the libraries, their use had not been widespread. The study suggested that it could be partly due to "librarians' perceived limitations in their abilities to set up profiles and in time dedicated for maintenance" (Hendrix et al., 2009).

As previously mentioned, Shaw and Spink (2009) identified varied models for virtual reference provision, such as hiring more staff to manage virtual reference services to release some work load of reference librarians. However, before HM Library decides to employ dedicated staff to handle virtual reference service, more studies need to be conducted to identify what can be done to reduce the librarians work load in handling their face–to–face users. One of the ways that could help in reducing these difficulties has indicated the need for the development of a database almost similar to an FAQ database. As mentioned earlier, Shaw and Spink (2009) had stated that developing an FAQ database is the most cost effective decision for libraries and the users can choose which mode to get information from the libraries. This will allow users to use self–service and hence, no new staff is required for a virtual reference service.

In this light, this study introduces a system to support virtual reference service at HM Library. It is a reference tool, designed to help librarians to keep references information that they have acquired upon receiving requests from students or staff. This new system should be able to cater to the specific needs of its users based on the subjects they are studying at the campus. The content of this reference database will grow over time and it will become an important resource for reference guide. Future users can use this reference information directly via online access. This is in-line with the direction of the university in response to the Ministry of Education Malaysia requirements in promoting blended learning and teaching approach and engaging students in the transformation process.

One of the problems that this system can solve is—eliminating the repetitive and straightforward reference questions which have already been answered by reference librarians previously. This can significantly reduce the total number of questions to be responded by librarians at the reference desk.

VIRTUAL REFERENCE SYSTEM

A prototype has been developed to support students in particular, studying at the campus. The design idea has not been presented to the library management staff at the main library. The researchers intend to test the system prototype at HM Library and distribute a simple questionnaire to students who have used the prototype after a certain period to understand their willingness to use the system. It is also to find out if students and librarians get the advantages it is supposed to bring.

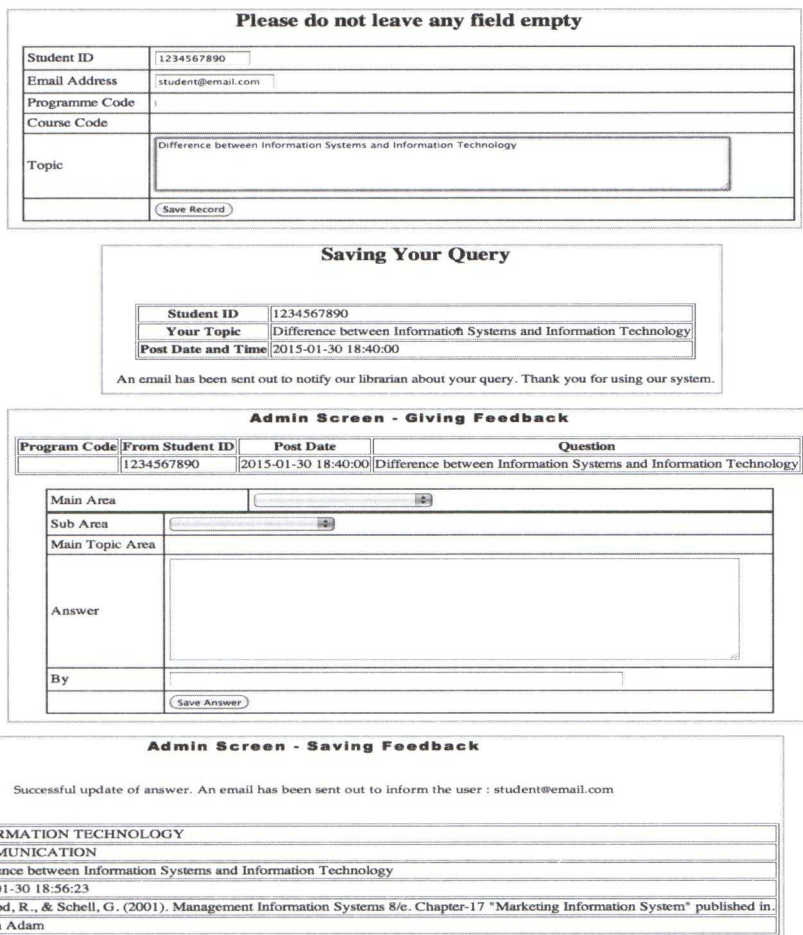Some of the snapshots of the prototype are shown in the following Figure 3.

Please do not leave any field empty

Student ID	1234567890
Email Address	student@email.com
Programme Code	
Course Code	
Topic	Difference between Information Systems and Information Technology

(Save Record)

Saving Your Query

Student ID	1234567890
Your Topic	Difference between Information Systems and Information Technology
Post Date and Time	2015-01-30 18:40:00

An email has been sent out to notify our librarian about your query. Thank you for using our system.

Admin Screen - Giving Feedback

Program Code	From Student ID	Post Date	Question
	1234567890	2015-01-30 18:40:00	Difference between Information Systems and Information Technology

Main Area	
Sub Area	
Main Topic Area	
Answer	
By	

(Save Answer)

Admin Screen - Saving Feedback

Successful update of answer. An email has been sent out to inform the user : student@email.com

Main	INFORMATION TECHNOLOGY
Sub	COMMUNICATION
Topic	Difference between Information Systems and Information Technology
Responce Date	2015-01-30 18:56:23
References	McLeod, R., & Schell, G. (2001). Management Information Systems 8/e. Chapter-17 "Marketing Information System" published in.
By	Aisyah Adam

Figure 3: Snapshots of the Prototype

Data collected by HM Library indicate that the library interacts directly with their users via a face–to–face medium, a traditional method of providing reference services, because this is the medium that the students prefer. Users will choose the method that they are comfortable with to achieve their goal in a short period of time. However, there are rooms for improvement in the reference services provided by the HM Library.

The proposed system gives access to students to post a question, check the answer to their particular question, and browse previous Q&A stored in the system. The system should be able to record Q&A real-time. When students can get what they want from the library through online method, they do not need to meet up with the librarian unless necessary. Questions related to research reference can be handled by the proposed system.

As mentioned previously, the proposed system can help reduce the number of face–to–face encounters when students themselves can view the answers online. Librarians do not have to use the existing reference desk system for research reference–type questions. It can continuously be used to capture data for other types of enquiries, such as search techniques and other requests.

HM Library needs to revisit their policy and processes related to reference services to support virtual reference services. It is good to have various ways of communicating with the users to give them flexibility; however, the library should have the capability to support them. Lastly, librarians need to be well–trained and competent in using social media tools to take full advantage of the benefits offered by these technologies.

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