Reference for the Remote User through Embedded Librarianship

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Abstract

Embedded librarians serve an important role in assisting remote users. Despite the varying degrees of embeddedness, all maintain the goal of ensuring the same high quality reference and instruction services that users have come to expect from the traditional library setting. Embedded librarians select and use technology that most effectively meets the needs of this unique user group. This technology can include the library website, course management systems, research guides, lecture and screen capture software, remote reference (including telephone, chat, and email), web conferencing, online survey tools, citation management, and social media.

KEYWORDS: distance learning; embedded librarians; remote reference; technology
Introduction

Over the past several years the number of students enrolled in online courses at colleges and universities continues to grow. From approximately 16.9 million in 2003, the number of students taking online courses has increased to 21.2 million in just nine years (Babson Research Survey Group, 2015). Just as the classroom has moved into the online environment, so, too, has the library. Print books and journals continue to be published and made available; however, for remote users print publications may not be an option. Electronic versions of resources must be made available through library websites in order to serve the needs of remote users. In addition to the increasing availability of online resources, embedded librarians themselves are now integrated into the virtual environment, as well.

Background

The perception of embedded librarians varies throughout the literature, often depending on the needs and goals of an institution. Frequently viewed as an expansion of the liaison model, Shumaker (2009) asserts that the concept of embedded librarians “comes from ‘embedded journalists,’ and places a reference librarian right in the midst of where the user is to teach research skills whenever and wherever instruction is needed” (p. 239). Some librarians hold office hours in their embedded departments while others are assigned to particular courses either in-person or virtually. Embedded medical librarians may participate in rounds or morning reports at a hospital with doctors. In a remote environment an embedded librarian may, perhaps, just appear as a picture on a chat widget or a name on an email; however, this virtual personage does not diminish the level of service provided or the potential to establish relationships with users. Diaz (2012) acknowledges that providing reference services in a distance environment at the same level as the physical location becomes a challenge (p. 2). In order to ensure remote users
receive the same level of customer service as in-person users, the Association of College & Research Libraries (ACRL) developed the *Standards for Distance Learning Library Services* in 2008. These standards suggest that “direct human access must be made available to the distance learning community through instruction, interaction, and intervention from library personnel in the provision of library services and in facilitating successful use of library resources” (ACRL, 2008, Philosophy: A Bill of Rights for the Distance Learning Community section, para. 2).

Embedded librarians often use technology to a greater extent in order to provide this level of service.

One benefit of an expanded embedded role is creating a stronger relationship between the faculty, students, and the librarians who possess “both subject expertise and strong knowledge of the interests, activities, and priorities of local faculty and academic departments” (Williams, 2009, p. 4). These relationships can lead to further collaboration and, subsequently, more effective and customized embedded service.

**Technology Used to Support Embedded Librarianship**

*Library Website*

In a literature review of library services for distance users, Raraigh-Hopper (2010) found that the most common library services offered to distance learners include:

- remote access to online library catalog; electronic databases; electronic books and journals; online information literacy tutorials; electronic research guides on academic and special interest topics; electronic general library guides; Ask-A-Librarian (chat, e-mail, or telephone); interlibrary loan; electronic reserves; and document delivery services. (p. 73)
The library website is the gateway for patrons to access these services. Embedded librarians can play an important role in influencing the design of library websites that facilitate use of the resources mentioned above. Liu (2008) recommends that academic library websites “switch the focus from presenting information arranged according to library functions and resources to providing targeted and customizable tools and services to library users” (p. 14). Embedded librarians have an in-depth knowledge of specific user groups. This information can be used to guide home page design and information architecture to fulfill the needs of both local and remote users.

Of equal importance for remote users is access to library resources and services through mobile devices. The Pew Research Center reports that “today nearly two-thirds of Americans own a smartphone, and 19% of Americans rely to some degree on a smartphone for accessing online services and information and for staying connected to the world around them” (Smith, 2015, Key Themes of This Report section). When considering design for mobile websites, it is important to gather information from your remote users. Mobile applications, menu options, widgets, and responsive design provide more functionality for remote devices.

One challenge in accommodating distance users is to not forget distance faculty. Ismail (2010) suggests that a student’s opinion and use of library resources and services are influenced by their professor’s opinion and use of the library’s resources and services (p. 730-731). Embedded librarians can promote the library and foster relationships with distance faculty by keeping the lines of communication open, maintaining an awareness of faculty research interests, and anticipating their needs.

Course Management Systems
A Course Management System (CMS), also referred to as a Learning Management System (LMS), is a platform that enables the administration and delivery of academic courses in both the in-person and the online environment. Common features in most CMSs are course specific areas with access to content, email options, file-submission features, discussion boards, and opportunities to embed lesson plans, video lectures, and files, though “none offer library content in their initial design templates” (Blevins & Inman, 2014, p. 358); links to the library are features that can be added. As York and Vance (2009) state, “one of the easiest ways to embed the library into the CMS is to have a default library tab or link inserted into every new course shell by the CMS administrator” (p. 203). This links students to the library’s website or specific content. Some universities have developed widgets to embed into the CMS that direct students to the library’s resources and reference services. It has been suggested that “integration of library resources into learning management systems has the potential to significantly enrich the educational experience of students and increase student use of library materials” (Black and Blankenship, 2010, p. 459). Furthermore, the use of library resources has been linked to improved student success (ACRL, 2010; Cox and Jantti, 2012).

In addition to embedding the library link into the CMS, having a librarian embedded into a specific course is one way to provide more individualized assistance. Embedding a librarian into the CMS provides a way to bring the library to the students who may not be able to physically visit the library. Students are more willing to make contact if there is a familiar librarian available. In some CMSs an embedded librarian can communicate with students enrolled in the class through email or discussion boards. Other times a librarian can be added as one of the instructors, course builders, or teaching assistants (Blevins & Inman, 2014, p. 358). Each of these roles provides differing levels of access to the course materials. Generally, the
embedded librarian does not have access to grading information, only course content materials, in order to better assist with assignments and reference requests. This is a particularly useful feature in programs with heavy research projects. Ismail (2011) states that “the personalized service that an embedded librarian can provide through a CMS is the main attraction for many libraries who cater to distance learners” (p. 247). Despite the challenges of an online environment, the librarian becomes familiar with the students in the class and can better personalize reference transactions and communications. Ismail’s study investigated the use of a personal librarian for adult learners through a CMS. Students used a Library Forum where the librarian provided the students with a personal picture and an introductory paragraph indicating services that could be provided to them. The librarian could post relevant course materials and resources to the forum and participate in discussion boards. Although the students in this study were encouraged to use various communication methods, Ismail (2011) noted the most frequently used communication method was email (p. 257). Posting to a discussion board makes the communication available for others in the course to view, which may be helpful for multiple students with the same question. Students who desire more privacy in their communications with the librarian might prefer the email feature.

One of the challenges presented with embedding a librarian into a CMS is that, in most cases, the CMS is managed by the university information technology (IT) department, not the library. A request may sometimes have to be made to the IT department in order to make changes to the library portal and areas of the course related to the library. It has been noted that students are more likely to use library resources when links are provided for them. Students have a tendency to use resources that are readily available and convenient to locate. Bowen (2012) states students appreciate the convenience of library links and are more apt to use them over
internet sources if the links are easily accessible (p. 449). For students, ease of use is one of the key factors determining where they will obtain their information. If the library link and access to the embedded librarian are easy to find in the CMS, there is a higher probability that students will use these options to discover and use library resources.

**Research Guides**

One way to embed library services into a course is to create research guides specific to that class or a particular subject. These guides have been a staple of libraries since the middle of the twentieth century. Originally designed as pathfinders, which were printed documents pertaining to a specific subject that directed users to relevant library resources, research guides have since moved into the digital realm. The first digitized guides were developed in the mid-1990s. Improvements in technology have increased efficiency in creating and using these guides. The use of html and proprietary software have expanded their creation and use. Ghaphery and White (2012) state that “subject-based research guides are a core component of academic library web services” (p. 22). They are also a tool created by and maintained by an embedded librarian that can be linked into a CMS or made available through a link on the library’s website. Some libraries use this type of platform as their website (Ghaphery and White, 2012, p. 25). The guides provide a way to direct users to the appropriate resources related to the content of the class or the specific subject and, in doing so, provide a form of ready reference that is tailored to the needs of a particular program or class. Working closely with faculty can help ensure that information and links provided in research guides are able to serve the needs of students and anticipate upcoming assignments even when the embedded librarian is not immediately available.
Research guides are often designed in conjunction with the course syllabus or assignment. Links to books and electronic resources available through the library can be included within the guide, as well as helpful tips on how to conduct searches, links to databases, PDFs of the assignment or syllabus, and even links to citation sources. Usually there is a picture and brief biography of the embedded librarian as well as contact information for both the librarian and the professor. Some guides also contain chat and feedback widgets for librarians to better provide reference services. Collaborating with an instructor to build a research guide can provide an additional opportunity to effectively serve distance learners and further develop relationships with faculty.

In addition to directing users to a library’s subscribed resources, these guides can link users to information freely available on the web including Open Educational Resources (OERs). While web resources and OERs are directly linked, subscribed library resources are customarily password protected or routed through proxy servers, so it is important to ensure that URLs used in guides include any proxy prefixes or additions. Referring users to credible web resources provides an opportunity to introduce website evaluation techniques whereby users learn how to assess internet resources for credibility and validity, and improve their information literacy skills.

One of the critical aspects of research guides is the need for proper maintenance. The embedded librarian needs to check links included in the guide on a regular basis to ensure that they are still valid and include any updated materials. Courtois, Higgins, and Kapur (2004) state research guides can “require significant time and effort to produce and maintain” (p. 194). However, they provide students an ease of access to resources necessary for completing their research.

*Lecture and Screen Capture*
Collaborating with an instructor can open the door for a variety of asynchronous multimedia library content to serve both distance and hybrid courses -- that is courses taught with both an online and physical classroom component. Embedded within an online course, short video tutorials can introduce online students to library resources, show them how to navigate the website or catalog, and teach best practices for searching databases.

Beyond the online class environment, video captures can be embedded in a research guide, on the library website, or simply shared via email. They can be as simple as a forty second screencast that demonstrates how to locate a database on the website, or as complex as a detailed library instruction video including a PowerPoint, demonstrations, and opportunities for the viewer to pause the video and practice what they have learned. Screencasts or videos created by an embedded librarian may serve as library orientations, tutorials, or a resource that teaches students to evaluate sources. It may also be used simply as an introduction or to provide a personal touch in the digital environment. Stagg and Kimmin (2012) observed that “the audio component serves to reinforce the visual element, to create a connection between the university and the student which has more impact than the simple text of e-mail…” (p. 65). The category of lecture capture software used most prominently for this kind of multimedia commonly falls under the umbrella of screencasting or screen capture software. Simply put, this refers to a program that, when activated, runs in the background on a computer and “captures” the contents on a monitor. This content can then be saved on YouTube, a personal PC, or an online library and later shared with users or students.

Depending on the software used, editing can range from being a simple snip or trim of unwanted sections from the video, to the inclusion of a wide array of shapes, symbols, transitions, effects, video speeds, animations, and even subtitles. Features such as visual cueing
with “arrows, highlights, and other visual means,” Scales, Nicol, and Johnson (2014) point out, “draw attention to a specific area of the screen [and] has been proven an effective method in reducing demand on the learner’s cognitive resources” (p. 245). The learning curve, however, can be steep, but most products offer some level of technical support such as online tutorials, knowledge bases, or phone and email support.

When deciding what types of screen capture videos to create, embedded librarians may wish to review the syllabus for assignments and learning objectives, as well as consult with faculty to ascertain any resources and publications that he or she prefer students to use. This can be a good time to make recommendations regarding new publications or resources with which the faculty may not yet be familiar. The most effective video tutorials are created with the input of faculty and this level of involvement is more likely to result in a resource that the faculty will promote to their students.

There are, of course, a few pitfalls that the embedded librarian needs to consider prior to recording a video lecture or tutorial including issues such as background noise, static, and poor lighting. Both video and audio problems can often be avoided by simply recording a sample under the same conditions prior to recording a lecture. Furthermore, in videos with a voice component, the inclusion of subtitles or an accompanying transcript can meet the needs of hearing-challenged students or faculty. By working with the faculty, the embedded librarian can be made aware of the class dynamic and any accommodations that need to be addressed.

Remote Reference

Communication is essential for a successful user/librarian relationship, especially in a remote environment. There are various ways for remote users to contact their embedded librarian. Recognizing the influence of technology on library reference, in 1996 the Reference
and User Services Association (RUSA) of the American Library Association originally produced the *Guidelines for Behavioral Performance of Reference and Information Service Providers* which outline recommendations for keeping reference services visible and approachable, maintaining nonjudgmental interest, listening to the information needs of the user, effective searching, and how to follow-up with users (RUSA, 2013). These guidelines have been updated several times as trends in technology have changed. With the most recent update, RUSA (2013) identifies “phone, virtual, text-based (e-mail, chat, texting, IM) and internet-based voice-only transactions” as remote reference transactions (Introduction, para 4). For example, in 2014 at Georgia Regents University’s (GRU) Summerville Campus, the telephone was still the predominant way remote users sought reference assistance; email was second followed by chat, then SMS (text). Appendix I reveals the percent of remote reference transactions conducted at GRU for 2014. The chat service is a new feature that was only launched on the Summerville Campus at the end of October of 2014. Despite its short implementation period, it received 7% of the total remote reference transactions for the year.

As with any reference transaction, the success or lack thereof in a remote environment is in part determined by the responsiveness of the librarian. The person on the other end of the remote reference transaction, as opposed to an in-person interview, cannot see what transpires when the chat is received. If the librarian answering the chat question has several communications occurring simultaneously, the new question must be acknowledged in a timely fashion so that the initiator does not assume their request is being ignored. During a remote reference transaction, it is appropriate for the librarian to maintain contact with the user and inform them of what is transpiring with their request. If the librarian is conducting a search, he or
she should inform the user that their inquiry is being attended. This reassures the user and indicates that their needs are important.

Although communication methods are different in a remote environment, the essential rules of reference transactions still remain. One of the first steps to providing good service in this area is keeping a chat service or other remote reference mediums visible to users. Telephone, text, and IM (instant messaging) numbers displayed in prominent locations on the library’s website indicates to users that the library is eager to assist. Chat widgets should be placed on the website in highly visible areas where ease of access is tantamount. The virtual reference interview should provide enough information for the librarian to understand the user’s information needs and be able help them navigate to appropriate resources.

Another key guideline is that the librarian “uses current technology during the reference interview to gather as much information as needed to serve the patron’s need without compromising patron privacy” (RUSA, 2013, section 3.2.1). Sometimes, the chat transaction can be referred to email if the user is uncomfortable using the chat service for privacy reasons or if the help requested requires extensive research from the embedded librarian. Despite being in a virtual environment, the user needs to know that the librarian is ready and willing to assist with their future information needs, as well.

Web Conferencing

Web conferencing is an online system used to host synchronous meetings between parties located in different physical environments. It provides an additional way to provide reference services. These software programs are usually available online and the price varies by vendor, sometimes requiring an institutional license. Some require users to download software on their computer, while other software is hosted by an online vendor. Additional features of web
conferencing software vary by the vendor, but may include the ability to invite multiple attendees, record sessions, share files or screens, or write on virtual whiteboards. All of these features allow embedded librarians to collaborate with remote users and provide traditional library reference and instruction through an online medium. However, it is important to use the interactivity features to engage users on a higher level for active learning. Farkas (2013) suggests that librarians can “poll students, create breakout rooms for group discussions or activities, and allow students to share their own screens or take control of the instructor’s screen.” Furthermore, students are able to make comments and ask questions in real time. Once again, such efforts are most effective when used in collaboration with faculty as they can be better tailored to meet the needs of specific assignments or classes. A webinar or web conferencing sessions can even be offered in lieu of a one-shot classroom instruction session; a distinct advantage being the ability to record and archive the session for students who are unable to attend live.

Embedded librarians at several universities report using web conferencing software as part of their services (Hoffman & Ramin, 2010; Montgomery, 2010). Specifically, librarians at the University of Alabama Birmingham chronicled their use of online instruction to offer training on specific databases, citations styles, research tools, and assistance with scholarly activities (Smith & O’Hagan, 2014). The embedded librarian for the College of Nursing at GRU uses WebEx (http://www.webex.com/) to provide research consultations to students and faculty in many remote locations. After a user contacts the librarian, the librarian logs into the web conferencing software and schedules the online meeting. WebEx then generates an email with the information to join the conference, which the librarian shares with the user. The screen sharing capabilities of WebEx allows the librarian to demonstrate how to locate resources and employ searching strategies in specific databases.
Challenges that arise with the use of web conferencing include the price and the potential for technology issues for both librarians and remote users. Licensing for well-known software can be pricey and libraries may not be able to shoulder the cost. Open source web conferencing software is available, but it may lack advanced technical features and have limited technical support. Software may have a high learning curve and some librarians may not feel comfortable with being viewed on a webcam or being recorded. Distance users may have trouble accessing the software or downloading widgets or extensions needed for the software to operate on their computer. Furthermore, the quality of internet access varies and web conferencing software often encounters issues on a Wi-Fi connection such as a delay between video and sound, or frozen video feeds. It can be useful to begin sessions with a brief slide of troubleshooting tips for viewers. Despite technology issues, web conferencing remains a useful tool for embedded librarians and one that provides the human component to reference assistance in a remote environment.

Survey and Data Collection

Survey and data collection serves a variety of needs from evaluating the effectiveness of a class or service; collecting information on the services, physical space or general satisfaction of users; or polling the users for input on future directions and service offerings. In 2013, the GRU Libraries released a survey through Qualtrics – a subscription online survey software – to establish a baseline for the users’ existing level of satisfaction with various aspects of the physical and virtual space, holdings, and services offered. Collecting this type of data is considerably more complicated without the availability of an easy to distribute online tool. Unlike paper surveys or focus groups, online surveys are easier to distribute, collect responses, and allow administrators of the survey to generate robust reports. Additionally, the built in
anonymity encourages more honesty and, therefore, validity in the results. Because of this convenience, the GRU survey was distributed to thousands of staff, faculty, and students with ease, and respondents could feel assured that their answers would be confidential.

For an embedded librarian, the potential uses for online survey tools are numerous. A link sent out after a “one-shot” instruction class, for instance, can provide valuable information to determine if learning objectives were met and what might need to be amended for future class sessions. This is particularly useful when a class or topic is likely to be taught regularly by the same librarian, as is often the case with embedded programs. Surveys can be issued prior to a class, webinar, or event to gauge the level of interest in a topic and help guide the design and content of the encounter. They can also be distributed after research and reference consultations to ensure the students received the information they needed. Online polling applications, such as Poll Everywhere (https://www.polleverywhere.com), can even be offered in real time using cell phones and an internet-connected classroom. By having students anonymously text a code or letter to indicate their answer to a question, the results can be instantly shared with the class and students’ understanding of a concept can be easily and quickly assessed.

There are some risks to be aware of before undertaking the design of a survey. Surveys should be kept brief and unambiguous. Generally, students and faculty are busy with many other tasks, so answering an in-depth or time-consuming questionnaire is unlikely to be a priority for them. If there is an opportunity for open-ended input, it should be kept to a minimum. Another common mistake is using a double-barreled question where two ideas are combined in one question (e.g., “Was the instructor courteous and punctual?”). Perhaps the most important consideration is to determine exactly what objectives or questions need to be addressed by the
survey. Questions should be reviewed periodically to ensure that they provide the information needed. Ambiguous questions should be clarified and extraneous ones removed.

One advantage of the embedded librarian model is that librarians have the opportunity to work with the same faculty and support the same courses from year to year. Data collection after one-shot instruction, reference appointments, or other contact with students can lead to more customized and effective reference and instruction in future.

Most survey tools provide several question formats, including multiple choice, Likert scaling (a scale that allows one to pick the intensity of a response from one extreme to the other, such as strongly agree to strongly disagree), matrix questions (multiple answers per row), ranking, and free text entry. The availability of other question formats depends on the survey tool and whether it is the free or more robust licensed version. One possible limitation of survey tools is that most of them only permit the collection of a finite number of responses before an upgrade is required. This may not prove to be an issue, as many of the situations in which a survey may be used by an embedded librarian – such as surveying a class before or after instruction – only necessitates a small number of respondents.

Before selecting a survey tool, the goals of the survey should be established. How many people will be surveyed? What methods of delivery will be used? What question format, skip logic, or visual style is most appropriate? Consideration of future needs (e.g., growth in class size, addition of more complex questions, etc.) should also be taken into account. Regular review of survey feedback with faculty can both accentuate the value of embedded reference services and lead to more responsive and personalized library services for future class offerings.

*Citation and Reference Management*
Citation or reference management software includes a variety of programs that are used by researchers and scholars to download, organize, and share bibliographic citations. Correct use of citation and reference formats can be a struggle for even seasoned academic writers and reference questions pertaining to correct citation formatting are common especially during midterms and finals. Furthermore, undergraduate students are often required to use different citation styles for different classes, making mastery of any particular format a challenge. Citation software can go a long way in decreasing the time spent on formatting citation styles and allow for students and faculty to spend more time writing. These products can not only help with formatting but can also be used to build and store bibliographies, sometimes including PDF or text files in addition to citation information. It is important to note that, as the learning curve can be steep for this type of software, embedded librarians should be acquainted with the software in order to provide support and instruction to their users through all phases of implementation.

In the world of citation management software, however, not all products are created equal. Choices include open source or subscription products; web-based or desktop; collaborative or standalone; and whether they can be used in conjunction with word processing software such as Microsoft Word or as an extension in a browser. One thing that most citation management software has in common is the ability to import citation information from research databases. Rather than users emailing their search results to themselves, saving them in online folders provided by the database, or copying and pasting search results to keep track of their sources, they can instead store the citation – and often the paper itself – in one place. Citation software generally allows users to organize their citations by project or folder and many provide the ability to export references and in-text citations that are formatted to meet the requirements of their profession, course, or publisher.
Depending on the source of the citation management software, there are different levels of functionality and convenience. The ability to insert in-text citations and reference pages directly into Microsoft Word or other word processing software is one of the most useful functions provided by many citation management products. Other common features include the ability to annotate PDFs, create groups to collaborate in both planning and writing, set up RSS feeds or alerts, organize citations and articles into folders (online or locally), and showcase work online. The ability to showcase work, share folders, and collaborate online has many uses in the distance learning environment. Students or faculty working collaboratively can build a reference library together, or a user can share their reference library with the instructor or embedded librarian for advice or commentary.

Incorrect citations can be the biggest challenge with citation management software. It is a good idea to recommend users review citations for mistakes before submitting a paper to a class or publisher. These citation management tools can be a remarkable time-saver and free up users to spend more time on papers and less time perfecting citations, but the learning curve is often steep and users may come to the library for assistance. Embedded librarians in particular should identify which citation management software is being used primarily within their institution or embedded area (perhaps with a survey) and be prepared to offer instruction or reference help as needed. Chenault (2011) observes, reference assistance with citation management software can become “a kind of feeder… and an entry point for our patrons to acquire database searching and research skills” (p. 8). Embedded librarians should also make a point to be familiar with the citation preferences of the faculty with which they work in order to provide accurate reference assistance to students.

Social Media
While library use of social media typically falls into the realm of promotion and marketing, some embedded librarians use social media tools as a supplement to information literacy sessions and online courses since they provide an easy way of connecting librarians and users outside the context of the classroom or library. This can also help to foster a more personalized relationship. Furthermore, teaching with social media may lead students to experience “greater engagement, greater interest [and results] in students taking more control and responsibility for their education” (Blankenship, 2011, p. 40). Embedded librarians at Mississippi State University use social media tools to embed themselves through social networking sites and blogs...[to] enhance the relationship and facilitate the close understanding and interaction between the librarians and their clientele” (Li, 2012, p. 137). The embedded librarians at GRU create educational blog posts and use social media to promote workshops, resources, and events. A daily “helpful reference tip” can also be added to the library’s social media sites.

Some of the most popular social media sites used by embedded librarians to provide reference include Facebook, YouTube, and Twitter. Users can visit their library’s Facebook page to find contact information, learn about upcoming events, or ask reference questions. Oftentimes professors in embedded areas establish Facebook pages for their classes to provide students with additional reading materials. The embedded librarian, as well as enrolled students, follow the course’s Facebook page. The librarian and faculty member work in conjunction to share links to outside resources that may be helpful for classes. For example, Grammarly.com frequently posts grammar rules and examples to their Facebook page. One member of the English faculty at Georgia Regents University shares Grammarly’s status updates while covering related material in class. The embedded librarian also shares stories from pages that she follows on the course’s
Facebook page. Embedded librarians can use YouTube to share library tutorials or embed videos into course management systems. As Monge (2007) asserts, “librarians can promote valuable information literacy lessons by posting videos on YouTube without having to teach students how to access videos or generate buy in” (p. 56). An embedded librarian at Wichita State University chronicled her use of Twitter in a Communication class to send tweets regarding new library content, links related to course content, announcements of interest to students, and answers to reference questions (Mallon, 2012).

Embedded librarians can also reach remote faculty users through social research networks. Professional networks, such as Academia.edu and ResearchGate (http://www.researchgate.net/), are platforms for faculty and researchers to collaborate and share research papers. Librarians following faculty members in their embedded subject areas can provide support through these networks. For example, in December 2013, Elsevier issued take down notices to users of Academia.edu for articles published in their journals (Howard, 2013). As informed contributors on copyright issues, embedded librarians engaged with their faculty within social research networks are in a unique position to provide education to faculty on copyright issues when a situation like this arises. As technology changes and new social media platforms emerge, embedded librarians gain more opportunities to connect with their remote users outside the physical boundaries of universities.

**Challenges and Solutions**

As with use of any technology, complications can occur. General issues that may be encountered when using technology in an embedded setting include maintenance downtimes, login or access issues, and computer malfunctions. The latter can affect users when they are completing work for an instructor, attending live or synchronous sessions, or using library
resources. Maintenance downtimes can often be anticipated by subscribing to news or listservs associated with software, publishers, or library consortia. Embedded librarians can facilitate quick resolutions to login or common technical problems by having FAQs or tutorials prepared for frequent problems and knowing the process for obtaining further technical assistance in the case of more complex issues.

Institutions aiming to increase enrollment are offering more and more courses in an online environment and librarians must meet the demand for personalized reference services. Mann and Thomes (2013) note that scalability “is the greatest challenge with regard to establishing, maintaining, and growing embedded librarianship in the online distance education environment” (p. 83). Despite the escalating number of classes offered online, the number of librarians available to embed usually does not increase. Librarians must evaluate and adapt their responsibilities to ensure remote users receive the personalized and trusted assistance embedded librarianship was designed to foster.

**Conclusion**

As technology and teaching paradigms continue to evolve, librarians will continue to adapt new methods by which they reach, educate, and provide reference to users within the library and embedded areas. Suarez (2013) notes that “despite significant changes in information formats, the pervasive use of internet technology, and student searching habits, the key finding is that students will continue to consult with librarians to the extent that they find the experience useful” (p. 527). The crucial component in any embedded experience is the relationship developed with the user. Communication is essential in order to fully realize the potential of embedded librarians in a remote environment. The experience must continue to be useful and productive to both
students and faculty alike and effective use of technology will only become a bigger part of that mission.
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