

TOWSON UNIVERSITY
COLLEGE OF GRADUATE STUDIES

EXAMINING THE ROLE OF THE EMBEDDED LIBRARIAN IN ONLINE

LEARNING: A QUALITATIVE STUDY

by

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A Dissertation

Presented to the faculty of

Towson University

in partial fulfillment

of the requirements for the degree

Doctor of Education

Department of Educational Technology and Literacy

Towson University

Towson, Maryland 21252

August 2013

TOWSON UNIVERSITY
COLLEGE OF GRADUATE STUDIES AND RESEARCH

DISSERTATION APPROVAL PAGE

This is to certify that the dissertation prepared by Deborah A. Nolan, entitled Examining the Role of the Embedded Librarian in Online Learning: A Qualitative Study, has been approved by this committee as satisfactory completion of the requirement for the degree of Doctor of Education in Instructional Technology, in the Department of Educational Technology and Literacy.

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DEDICATION

For my son Ryan

who has inspired me to do more than I ever dreamed possible,

and

in memory of my parents Richard M. and Eileen E. Nolan,

who always believed in me.

ACKNOWLEDGMENTS

To Dr. Liyan Song, my dissertation advisor, thank you for sharing your expertise about instructional technology, distance learning, and qualitative research. I am deeply grateful for your teaching, guidance, and patience.

To Dr. Jeff Kenton, Dr. Gilda Martinez-Alba, and Dr. Sarah Lohnes-Watulak, my dissertation committee members, thank you for your advice and assistance.

To my Towson University Albert S. Cook Library colleagues, thank you for your encouragement and support. I am so lucky to work with you.

To my friends, thank you for your endless faith in me over all these years. I never could have done this without all of your good wishes and prayers.

ABSTRACT

EXAMINING THE ROLE OF THE EMBEDDED LIBRARIAN IN ONLINE LEARNING: A QUALITATIVE STUDY

Deborah A. Nolan

As the array and scope of distance learning programs and online learners in higher education expand, the academic library's role in enhancing student success assumes new dimensions. Academic libraries are committed to providing distance learners with the resources and services equivalent to those provided to learners in a traditional environment (American Library Association, 2008). Academic librarians, instructional partners in the higher education enterprise, enhance the learning, teaching, and scholarship of their institutional constituents regardless of time or place. To ensure comparable support to distance learners, some academic libraries have implemented a model in which the librarian, embedded into the online course, provides resources, services, instruction, and research support to students and faculty via technologies that bridge separations of time and space.

This study sought to better understand the role of the embedded librarian in online courses. Through a multicase qualitative approach, this research examined instructor, student, and librarian perceptions of how the embedded librarian worked in four online courses. The research findings revealed multiple factors that affected perceptions of the value of, challenges to, and future enhancements for the work of the embedded librarian. Communication, librarian's assistance to students, and librarian's availability were among the factors that shaped perceptions of the value of the embedded librarian. Perceived challenges to the work of the embedded librarian emerged as issues related to

role clarification, technology functionality, and librarian workload, among others.

Perceptions of future enhancements for the work of the embedded librarian were shaped by factors including planning, librarian competencies, and types of courses to support.

This qualitative study provided insight to the work of the embedded librarian in online courses. With a deeper understanding of instructor, student, and librarian perceptions of the role of the embedded librarian, academic libraries can enhance their support to the growing number of distance learners in higher education. Given the digital realm's primacy for change in the academic universe, this enhanced understanding is not only important, it is vital to libraries accomplishing their missions in the continually evolving educational frontier.

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CHAPTER I: INTRODUCTION

As the array and scope of distance learning programs and online learners in higher education expand, the academic library's role in enhancing student success assumes new dimensions. Academic libraries are committed to providing distance learners with the resources and services equivalent to those provided to learners in a traditional environment (American Library Association, 2008). Academic librarians, instructional partners in the higher education enterprise, enhance the learning, teaching, and scholarship of their institutional constituents regardless of time or place. Innovative strategies are required to ensure distance learners receive the full range of library services and resources, including personal attention, given to face-to-face learners. To assure comparable support to distance learners, some academic libraries have implemented a model in which the librarian, embedded into the online course, provides resources, services, instruction, and research assistance to students and faculty via technologies that bridge separations of time and space. The embedded librarian reaches beyond the library walls and campus boundaries to enrich the academic endeavors of students and faculty. The embedded librarian's role in the distance education environment is one element of the twenty-first century of academic library, and it is one strategy in the academic library's contribution to the institution achieving its educational mission.

In October 2011, the Association of College and Research Libraries (ACRL) approved the new *Standards for Libraries in Higher Education*. Designed to "guide academic libraries in advancing and sustaining their role as partners in educating students, achieving their institutions' missions, and positioning libraries as leaders in assessment and continuous improvement on their campuses," the standards are based on nine

principles (ACRL, 2011, p. 5). Two of the nine principles often reflected in academic library mission statements are:

1. Educational Role: Libraries partner in the educational mission of the institution to develop and support information-literate learners who can discover, access, and use information effectively for academic success, research, and lifelong learning.
2. Discovery: Libraries enable users to discover information in all formats through effective use of technology and organization of knowledge. (ACRL, 2011, p. 9)

For example, the Dartmouth College Library (2012) “fosters intellectual growth and advances the mission of Dartmouth College and affiliated communities by supporting excellence and innovation in education and research, managing and delivering information, and partnering to develop and disseminate new scholarship” (Library Mission and Goals, para. 1). At Towson University (2011), Albert S. Cook Library “supports and enhances the learning, teaching, and scholarship of the Towson University community, facilitating intellectual inquiry, inspiring innovation, fostering effective collaboration, and creating pathways to lifelong discovery” (Mission and Vision, para. 1). Similarly, the mission of the University of Pittsburgh (2007) Library System is to “provide and promote access to information resources necessary for the achievement of the University's leadership objectives in teaching, learning, research, creativity, and community service, and to collaborate in the development of effective information, teaching, and learning systems” (About Us, para. 1).

Achievement of the mission depends on library resources and services including knowledgeable customer-focused staff; accessible, relevant collections; well-maintained facilities; information literacy instruction; and timely research assistance. Across

institutional types and even in the age of rapid technological change, the academic library mission remains constant.

For centuries libraries had been viewed as repositories of materials. Knowledge was guarded and information censored. Librarians were charged with organizing, preserving and protecting the libraries' holdings. Over time the general public gained access to library collections, and information became available universally. Academic libraries evolved from warehouses of books to hubs of information, inquiry, and inspiration. The Association of College and Research Libraries (2007b) declared

The iconographic power of a college or university library expresses a purpose not just to collect, but also to organize, preserve and make knowledge accessible.

Today on the campus of virtually every higher education institution the library occupies a central position. In its placement and prominence, the academic library conveys its integral role in supporting higher education's core missions of research and education. (para.1)

In Estabrook's (2007) study, chief academic officers (CAO's) reported the importance of the "library's physical, political, and intellectual connections with the campus" (What do they want from their libraries? Section, para. 1). CAO's want their libraries to be used and their faculty and students to be satisfied. Oakleaf (2010) referenced the transformation of academic libraries calling librarians to demonstrate institutional value; implement assessment programs; link to student retention, achievement, graduation and job success; and contribute to overall institutional reputation.

Lippincott (2006a) described the transformed 21st century academic library as an information commons, learning commons, or academic commons where students and faculty collaborate in social academic space. Academic libraries are vibrant places with spaces for individuals and groups of learners to explore, expand, and create knowledge; experience cultural enrichment; and translate ideas into all manner of presentation. Now welcoming, inviting, and appealing spaces for students, food and drink are part of the library landscape. In fact, “it’s rare to see a college redesign its library now without making plans to include dining and coffee” (Foster, 2008). Chu (2008) illustrated that the focus was on human-centered or user-centered design for libraries. Twenty-first century academic libraries feature technology galleries, quiet and group study spaces, Wi-Fi throughout, technology research and development labs, comfortable seating, flexible furniture, presentation areas, and technology concierge services (Chu, 2008).

Librarians have transitioned from protectors of the collection to disseminators of information resources. Purchasing and licensing materials remain significant responsibilities. However, providing access to information resources is critical. Wood and Walther (2000) predicted that

the library of the future will be more a portal through which students and faculty will access the vast information resources of the world and less a place where information is kept. It will concentrate on access and knowledge management rather than on physical ownership of materials (173).

Librarians participating in a Roundtable on Technology and Change in Academic Libraries observed that,

the business of libraries can now be understood as one component of a rapidly evolving, almost wholly transformed environment in which information is proliferating at heretofore unimagined rates and in which the ability of academic libraries to deliver authenticated and reliable information is continuously challenged by new technologies. (ACRL, 2007b, para. 4)

The concept “library as place” remains important, while simultaneously academic libraries are virtual realities providing resources and services to users who never visit a library building (Association of College and Research Libraries, 2010). Technology expedites access to information worldwide, enabling flexible modes of instruction, distance learning among them. Emerging technologies such as the Internet, blogs, wikis, and podcasting are being integrated into online instruction (Kim & Bonk, 2006). Wood and Walther (2000) explained that the growth in distance education had been “enhanced by the growing availability of digital information resources accessible to distance learners at remote sites” (p. 179). Technology makes it possible for local and distance learners to access relevant, accurate, and authoritative information without visiting the physical library of their institutions. Dew (2001) cited a study of off-campus students at the University of Iowa who ranked access to web and/or e-mail reference services and remote access to full-text databases the most important library services for them. Parnell (2002) outlined the ways in which academic libraries support quality distance learning programs through twenty-four hour, seven days a week access to digital library resources and to collections of other institutions. He further noted, in the sea of technological resources, the support of librarians remains essential to online instruction and other modes of distance learning (Parnell, 2002).

Higher education and academic libraries have experienced significant evolutions over the past five decades. New directions for librarianship with the emphasis on information literacy instruction; innovations in education with developments in instructional design and technology; expansion of information resources through digital technologies; and distance learning as both an entity and a process – these phenomena generate the framework for this study.

Recent Developments in Higher Education

College and university students. Millennial students, who are generally defined as those born between 1980 and 2000, comprise a significant portion of higher education enrollments today (Deyrup, 2007; Howe & Strauss, 2007; Sweeney, 2009). According to the U.S. Department of Education (2010b), in the ten years from 1999 to 2009, “the number of 18- to 24-year-olds increased from 26.7 million to 30.4 million, an increase of 14 percent, and the percentage of 18- to 24-year-olds enrolled in college rose from 36 percent in 1999 to 41 percent in 2009” (Fast Facts, para. 1). Illustrating the growth of the millennial demographic in higher education, fall 1970 enrollments of students aged 18 – 24 totaled 5,937,000, and thirty-nine years later, fall 2009 enrollments of students aged 18 – 24 nearly doubled to 11,630,000 comprising 57% of all undergraduate enrollments (U.S. Department of Education, 2010a).

The higher education literature brims with articles about millennial students (Chu, 2008; Deyrup, 2007; Howe & Strauss, 2007; Lippincott, 2006b; Lippincott, 2009; Sweeney, 2009). In addition to seven core traits of the Millennial Generation - special, sheltered, confident, team-oriented, conventional, pressured, and achieving - Howe and Strauss (2007) described millennial students as “focused on grades and performance;

talented in digital-mobile technologies; capable of multitasking, and interested in interactive learning” (p. 31).

McNeer (1991) recounted how millennial students approach libraries and research, “year after year students arrive on our campuses unable to use our libraries” (p. 294). Despite the advent of technology in libraries and education, little change in student abilities to use libraries has occurred since McNeer’s statement. Contrary to a common assumption held by faculty, students of the millennial generation are not fully computer literate. As Jenson (2004) observed, students “can surf the Net at breakneck speed and can create sophisticated Web pages. Too often, however, such prowess does not translate to conducting academic research, the backbone of higher education” (p. 108). Parker-Gibson (2005) summarized the challenges faculty face when students do not meet their expectations for library research and recognized that “faculty members’ frustration ... has been evident for a long time, but has been exacerbated by the Internet as students are prone to start any type of research assignment by using Internet sources and often without consulting traditional sources” (p. 85). According to Parker-Gibson, students consistently indicated that “search engines and databases are equivalent” (p. 96). Macklin and Fosmire (2004) explained the dilemma as the “fundamental user belief that competence with technology and the ability to retrieve information are the same skill sets. In fact, they are not” (p. 44).

Non-traditional students (i.e. those age 25 and older) totaled 8,598,000 in Fall 2009, comprising 42% of higher education enrollments (U.S. Department of Education, 2010a). Non-traditional students very likely work full or part time in addition to taking classes. Often they have additional responsibilities such as families. Non-traditional

students may possess characteristics of adult learners described as the six principles of andragogy “1) the learner’s need to know, 2) self-concept of the learning, 3) prior experience of the learner, 4) readiness to learn, 5) orientation to learning, and 6) motivation to learn” (Knowles, Holton, & Swanson, 1998, p.3). While there is no one theory about how adults learn, the characteristics of adult learners must be considered in designing the learning environments of non-traditional students (Cercone, 2008). Non-traditional students may be uncomfortable with or even intimidated by technology. Sivakumaran and Lux (2011) explained, “for students who feel intimidated by technology, learning both course contents and the technology in unison can be a daunting task. In addition, some students state that they ‘spend more time figuring out the course management system’ than learning course contents” (p. 155).

Distance learners may be millennials or non-traditional students. Regardless of age, responsibilities, or multiple life roles, all distance learners have something in common: they are engaged in a formal course of learning that occurs in a format other than face-to-face with the instructor. In fact, distance learners may be located physically on campus but opt for taking courses via online technology rather than in person. Distance learners have the same library needs as students who physically visit the library. Gandhi (2003) pointed out “they want fast, easy, convenient access to information” (p. 139). Tumbleson and Burke (2010) remarked, “college students seem to desire a ‘just in time’ research approach to the one thing they need now and appreciate an available librarian-guide” (p. 974).

Instructional technology. Innovative technologies facilitate learning and enhance the learning environment. Course management systems, discussion boards,

social networking media such as wikis and blogs, and collaboration tools are incorporated into teaching and learning strategies. Technology provides learners with convenient, reliable access to educational content. Students and teachers can link to online resources, including electronic databases, journal and books, tutorials, digital learning objects, e-reserves, and digital collections available from the library. Instructional design is applied to technology-based applications for active learning including games, simulations, media production, presentations, and teleconferencing (synchronous and asynchronous), enhancing development of communication, critical thinking, and problem solving skills. Technology weaves through instructional design, teaching and learning, digital resources, and delivery modes, all in service to learners.

Just as instructional and information technologies have affected the academic library and the traditional classroom, they have enabled a transformation in the distance learning environment. Where distance education was once restricted to correspondence courses supported by the postal service, Thanks to technology, distance education now utilizes a variety of course delivery modes. Courses may be offered via telecommunications to distant locations at which students meet as a group and participate in a synchronous interactive teleconference format. Distance courses may be a combination of online and in-person instructional venues, commonly called hybrid courses. Distance courses may be delivered entirely online.

Distance learning. According to Moore, Dickson-Deane, and Gaylen (2011), the definitions and distinctions between distance learning, online learning, and e-learning have changed over time and continue to be difficult to differentiate. Duin (2004) explained, “Online learning involves the delivery of courses and learning components via

the Internet. These courses and course components are delivered from an educational provider to a student. Although online learning is one form of distance learning or e-learning, these terms are often used interchangeably” (Online Learning entry).

The U. S. Department of Education (2008) defined distance education “as a formal education process in which the students and instructor are not in the same place” (Description, para. 1). The United States Distance Learning Association (2010) described distance education as an organizational framework and process of providing instruction “when a teacher and student(s) are physically separated, and technology (i.e., voice, video, data, or print) is used to bridge the instructional gap” (Glossary, p. 45). Distance learning takes a variety of forms and “puts the emphasis on the learner and is especially appropriate when students take on greater responsibility for their learning as is frequently the case when doing so from a distance” (United States Distance Learning Association, 2010, Glossary, p. 46).

The National Center for Education Statistics (2011) stated,

Distance education courses and programs provide flexible learning opportunities to both undergraduate and postbaccalaureate students. In this indicator, distance education courses include live, interactive audio- or videoconferencing; prerecorded instructional videos; webcasts; CD-ROMs or DVDs; or computer-based systems accessed over the Internet. Distance education does not include correspondence courses. (Fast Facts section)

Modes for distance learning include mobile learning, computer-based training (CBT), web-based training (WBT), instructor-led training (ILT), online training, online

learning, blended learning, classroom training, and webinars (United States Distance Learning Association, 2010).

The Sloan Consortium (Allen & Seaman, 2013), categorized three primary types of online courses: 1) online courses have at least 80 percent of the course content delivered online; 2) face to face and web-facilitated courses deliver one to 29 percent of the course content online; and 3) blended or hybrid courses deliver between 30 percent and 79 percent of the content online. The guidelines for designating online courses may be modified by individual institutions of higher education. For example, according to R. Giordani (personal communication, July 16, 2010), the study institution defines an online course as 100% online; a hybrid course is 50% to 99% online; and a course with less than 50% of the delivery online is considered web-enhanced.

In this study, the terms distance education and distance learning are used interchangeably. Online learning, the focus of this research study, is one strategy under the umbrella of distance education. This researcher is using the Sloan Consortium guideline for online courses that states at least 80 percent of the course content is delivered online.

According to the U.S. Department of Education National Center for Education Statistics (2008), during the 2006 - 2007 academic year, 65% of all 2-year and 4-year institutions of higher education offered college-level, credit-granting distance education courses. Of those institutions, 61% reported offering online courses, 35% offered hybrid/blended courses, and 26% offered other types of college-level credit-granting distance education courses.

Radford (2011) reported, “from 2000 – 2008 the percentage of undergraduates enrolled in at least one distance education class expanded from 8 percent to 20 percent” (p. 3). Of the students enrolled in distance education classes in 2008, 59.7 percent were 23 years of age or younger (p. 5). Nonetheless, “older undergraduates and those with dependents, a spouse, or full time employment participated in both distance education classes and degree programs relatively more often than their counterparts” (p. 3).

Allen and Seaman (2013) reported in the Sloan Consortium document on online education that over 6.7 million students were taking at least one online course during the fall 2011 term, which is a 9.3 percent increase over the number reported the previous year, and contrasts with an annual growth rate in post-secondary enrollments of negative 0.1 percent. More than 32 percent of higher education students now take at least one course online (p. 17).

Academic Libraries and Distance Learning

Distance learning requires the full range of academic and student affairs support from the higher education enterprise, including from the library. The Association of College and Research Libraries (ACRL, 2008) recognized that strong library support is essential for effective learning experiences and must be provided equally for on-campus and distance learners. The ACRL (2008) approved “Standards for Distance Learning Library Services,” defining its Library Access Entitlement Principle:

Every student, faculty member, administrator, staff member, or any other member of an institution of higher education, is entitled to the library services and resources of that institution, including direct communication with the appropriate library personnel, regardless of where enrolled or where located in affiliation with

the institution. Academic libraries must, therefore, meet the information and research needs of all these constituents, wherever they may be. This principle of access entitlement, as applied to individuals at a distance, is the undergirding and uncompromising conviction of the *Standards for Distance Learning Library Services*. (Executive Summary, para. 1)

Jurkowski (2003) succinctly summarized, “distance learners need the same services as traditional students. ... The differences, however, lie in the use of technology for communication and access, and the arrangements used to compensate for the distance” (p. 80). This statement holds true in 2013.

In pledging to provide support and resources to distance learners equivalent to that provided for on-campus instruction, the Association of College and Research Libraries defined distance learning library services as those

in support of college, university, or other post-secondary courses and programs offered away from a main campus, or in the absence of a traditional campus, and regardless of where credit is given. ... The phrase [distance learning library services] is inclusive of services to courses in all post-secondary programs designated as: extension, extended, off-campus, extended campus, distance, distributed, open, flexible, franchising, virtual, synchronous, or asynchronous. (ACRL, 2008, Definitions section, para. 1)

While distance learning grows, the quality of online learning remains a concern in some quarters. Allen and Seamen (2013) reported that 77 percent of academic leaders “rated the learning outcomes in online education as the same or superior to those in face-to-face,” however faculty acceptance of “the value and legitimacy of online education” is

perceived to be only 30.2 percent by their academic leaders (pp. 5 – 6). Tripathi and Jeevan (2008) emphasized that open and distance learning must “prove that the quality of student learning is at least equivalent to face-to-face teaching” (p. 46). They declared that library support, through resources, services, and information literacy instruction, contributes significantly to the quality of distance learning. Tipton (2001) predicted, “if distance-learning programs are to be credible and successful, the distance-learning student must have the same access to library support services as the on-campus student” (p. 394). As far back as 2002, Parnell viewed access to library support so significant that he questioned the “appropriateness of offering the same academic award to those students without equivalent access to learning resources” (The Value of Library Services section, para. 4).

The Association of College and Research Libraries (ACRL, 2010) compiled the top ten trends in academic libraries, and each trend was grounded in or affected by technological advances in libraries. Digital collections, mobile devices, scholarly communication, intellectual property issues, institutional repositories, staff competencies, accountability, assessment, collaborative services, library management systems, space, and budgets – all reflected the impact of technology on academic libraries as indicated in ACRL’s list of top ten trends. A perusal of publications in the field of academic librarianship yielded numerous reports on cloud computing, virtual reality, discovery tools, social networking applications, and mobile technologies. Online access to library resources in the form of electronic databases, e-journals, e-books, and streaming media is routine. Online tutorials, digital subject guides and course gateways, unmediated interlibrary loan, and virtual reference assistance are standard in the portfolio of academic

library services. Konieczny (2010) advised, “As new technologies become available that will support the mission to provide user-centric services, librarians should embrace these technologies and continue to reinforce the relevance of the library in the digital age” (p. 56). Technology was also a strong theme in ACRL’s “2012 Top Ten Trends in Academic Libraries” with specific mention of “the rise of online instruction and degree programs” and the concomitant effect on academic libraries (p. 313).

Technology enables local and distance learners to access relevant, accurate and authoritative information without visiting a physical library. Raraigh-Hopper (2010) listed the most common library services offered to distance learners as remote access to the online library catalog and to electronic resources including databases, e-books, e-journals, and e-reserves; online information literacy tutorials and research guides; Ask-A-Librarian services such as chat, e-mail, and telephone; and document delivery services. The advent of information technologies, including digital materials and electronic delivery systems, pushes information access to a level few ever imagined. Librarians connect students and faculty with information, regardless of format or ownership. Long before electronic resources, librarians located and retrieved materials from other libraries via interlibrary loan operations. Technology developments ranging from the Internet and e-mail to digital databases and streaming media fast-tracked access to information, influencing user needs and expectations.

Goetsch (2008) explored the impact of technology on the use of libraries and identified four new core responsibilities of librarians: “consulting services; information lifecycle management; collaborative print and electronic collection building; and

information mediation and interpretation” (p. 167). Each of these core functions involves access to information.

The library’s role in promoting student success assumes new dimensions in the distance learning environment. Allen and DeBlois (2008) predicted that the growth of e-learning, distributed learning, and blended learning would increase the demand for technology resources. Library resources and services are among those technology resources essential for online learning. Clayton (2007) applauded librarians’ “renewed commitment to satisfy the needs of their virtual patrons” in his collection of essays by front line practitioners who offered “an extensive range of real remedies and practical ideas” on the design, delivery and assessment of distance library instruction (p. ix).

Academic library support for student success in the distance learning environment affects the work of the academic librarian. According to the Association of College and Research Libraries (2010), “changes in higher education will require that librarians possess diverse skill sets” (p. 287). Gandhi (2003) described the “wide-ranging arsenal of skills” distance learning librarians must possess, including yet moving beyond traditional reference, collection development and instruction skills to competencies with technology, copyright, resource licensing, time management, collaboration, and communication (p. 140). Technology in all forms will have a significant impact on the resources, services, operations, and responsibilities of academic libraries and librarians.

Technology provides avenues for librarians to teach, guide, and engage with distance learners; however, technology alone is insufficient. Jurkowski (2003) found that “creating a powerful web site, offering numerous services, providing a wealth of online resources, and librarians to support the students can only go so far” (p. 84).

Learning communities heighten the educational experience and are characterized as dynamic, multi-directional environments in which all participants are learners and teachers (Lippincott, 2006b). Librarians are members of the distance learning community which the Association of College and Research Libraries (2008) defines as “all individuals, institutions, or agencies directly involved with academic programs or extension services offered away from or in the absence of a traditional academic campus” (Definitions section, para. 2). Lippincott (2006b) urged librarians to become active participants in the online learning community created by course management systems. She encouraged librarians to add value to the online learning community through virtual office hours, blogs, discussion boards, and social book marking. Dewald (1999), cautioned that online library instruction and tutorials are insufficient for distance learning and emphasized that librarian-student interaction, in one form or another is essential.

Wood and Walther (2000) declared that “contrary to the belief of some that the Internet will render librarians and their services obsolete, the digital revolution has made librarians all the more essential (p. 173). Burge (2001) cautioned that “when complex information topics are flung at relative novices, or when the enquiry terms remain unclear, then disintermediation has to give way to proactive, ‘intelligent agent’ intermediation” (p. 10). Burge advocated five guiding principles for librarianship in distance education:

- Clarify and conduct work in users’ terms (defined broadly)
- Build relationships (political, educational, informational, logistical)
- Value your intermediation as essential
- Reach past the technology tools to the human conditions

- Grow tall from the soil of a fine tradition, but avoid being root-bound. (p. 14)

Shumaker and Tyler (2007) named five critical success factors for librarians supporting distance learners, only one of which specified technology: “interpersonal communication skills; library research and reference skills; information organization skills; information technology skills; and knowledge of customer subject domain” (p. 18). Shank and Dewald (2012) added that, with the “growth of library instruction, the evolution of educational technologies, and the advent of information literacy, the instructional role of the academic library has expanded, and with it, the skills the librarians need” (p. 78).

Libraries make extensive efforts to ensure adequate support to distance learning through virtual reference services; electronic access to and delivery of resources; online information literacy instruction; course management systems; librarians as online co-instructors; and technological applications such as instant messaging, e-mail, chat, blogs, wikis, and RSS feeds (Figa & Bone, 2009). Owens and Bozeman (2009) argued that, to support distance education effectively, the librarian must be able to use the online course management system, understand course material and assignments, develop a good relationship with the information technology staff, be comfortable using Web 2.0 and social networking software, and stay current with technology applications related to online learning.

The exponential increase in information compounds the task of locating quality information (Owens & Bozeman, 2009). The students need to learn what is available and how to access and use it effectively. Shank and Dewald (2010) declared the librarians’

significant instructional role calls for new skills in instructional design and educational technology. In the technology-enabled distance learning environment librarians must be innovative, creative, flexible, and accessible in new ways. Gandhi (2003) predicted that “teaching information literacy skills to distance learners will require a more proactive and creative approach” (p. 149).

Owens and Bozeman (2009) proposed that librarian collaboration with faculty is critical to reaching online students. They documented the need for librarians to initiate and develop partnerships with faculty, and to demonstrate the benefits of students having better information literacy skills. Mullins, Allen, and Hufford (2007) explored the realities and implications of distance learning for academic libraries, pointing out that “as distance learning grows and online instruction proliferates, the ‘just-in-time’ model of imbedding library tutorials into Web-based courses complements traditional ‘just-in-case’ library instruction, and may surpass it in the future” (p. 246). Tripathi and Jeevan (2009) echoed this premise explaining “the distance librarians’ role will be to ensure delivery of ‘just in time’ and ‘just in place’ equitable services for distance learners” (p. 57).

Academic librarians have committed themselves to teaching information literacy skills as a foundation for lifelong learning. The librarian has a positive impact on student success in face-to-face learning by assisting learners to locate, retrieve, evaluate, and use information effectively. Macpherson (2004) proposed “information literacy is necessary not just for successful university study; it is essential to survival in the information age” (p. 240). Academic librarians play an active role in student achievement (Gibson, Newton, & Dixon, 1999). As far back as 1919 in its first accreditation standards, the Middle States Commission on Higher Education (2003) emphasized the importance of

libraries and librarians in academia. Macpherson (2004) linked information literacy to academic success, defining information literacy as,

a group of competencies essential to academic success, and beyond that, to performance in the ‘information society.’ Elements of information literacy – research, analyzing, interpreting, disseminating – have always been integral to the development of the mental discipline that characterises a successful graduate. (p. 226)

Gibson (Ed., 2006) reported that librarians contribute to student success as measured by the National Survey of Student Engagement, particularly in the benchmarks of enhancing academic challenge, increasing active and collaborative learning, and creating a supportive campus environment. Macpherson (2004) connected information literacy to professional success, arguing that

the ability to reach a sound judgment as to the significance of an idea or other information, whether it presents in the form of a scholarly article, an argument propounded by a politician, a problem of bio-ethics, or a financial market crisis, is fundamental to the development of information literacy, as sound judgment underpins decisions made in any problem-solving process, and the achievement of optimal problem-solving outcomes is arguably one of the primary applications of information literacy. (p. 227)

Interaction with a librarian enriches the learning environment, particularly when the interaction is related directly to course objectives. As Shank and Dewald (2003) claimed, “the closer the link between course assignments and library resources to help

with those assignments, the greater the likelihood that students will access library information” (Benefits and Drawbacks of MiLLCI Section, para. 1).

As on campus, academic librarians have a crucial role in the information literacy development of distance learners (Wood & Walther, 2000). The Association of College and Research Libraries (2006) asserted that

the challenge for those promoting information literacy in distance education courses is to develop a comparable range of experiences in learning about information resources as are offered on traditional campuses. Information literacy competencies for distance learning students should be comparable to those for "on campus" students. (“Information Literacy and Higher Education” section, para. 2)

Embedded librarian in distance learning. Academic libraries are committed to providing equivalent support to both face-to-face and distance learners. Rapidly evolving technologies enable libraries to provide access to information resources; foster intellectual growth; facilitate librarian-student interaction; and enhance the learning, teaching, and scholarship of all the institutional constituents they support, regardless of time and place. The academic library embraces innovative technologies in the form of electronic resources and digital collections; content management and delivery; instructional materials and strategies; and communication modalities. While technology provides advantages for distance learners to access library resources, technology alone is not enough (Jurkowski, 2003). Distance learning calls for innovative strategies to ensure students and faculty receive library resources, services, and instruction equal to those provided to face-to-face learners. What else can libraries do to provide effective support to online students? The attention and direct support from an academic librarian is

essential. In particular, the embedded librarian has been described as a potential model for providing library support to online learners.

Several academic libraries engage their distance learning communities through an embedded librarian model that facilitates direct interaction between students and librarians regardless of physical proximity (Figa & Bone, 2009; Herring, Burkhardt, & Wolfe, 2009; Konieczny, 2010; Matthew & Schroeder, 2006). Shumaker and Tyler (2007) described “virtual embedding” as the “delivery of library services in a virtual workspace exclusively for the use of the customer group” (p. 21). The embedded librarian is ever-present, supporting the faculty and students in the distance learning course. Beyond working with the faculty member to identify discipline-related resources and integrate information literacy objectives in the course, the embedded librarian actively participates in the distance learning course on a regular basis. Konieczny explained “embedded librarianship in online classes is an exciting and rewarding venture that will help to bring library services and resources into the users’ online classroom” (p. 56). The embedded librarian assists students throughout the course in clarifying research topics; identifying resources to use for research; selecting and using appropriate databases; determining authenticity of sources; avoiding plagiarism; citing sources correctly; organizing research results; and creating presentations of research findings. Tumbleson and Burke (2010) declared “the embedded librarian, familiar with the faculty’s research assignments, technology, and the relevant library resources and who is available within a student’s course, is an ideal solution” for supporting distance learning (p. 974). Kesselman and Watstein (2009) predicted, “successfully embedded libraries

and librarians demonstrate the many ways it is possible to transcend traditional roles and underscore the unique value we add as institutions and individuals” (p. 398).

Statement of the Problem

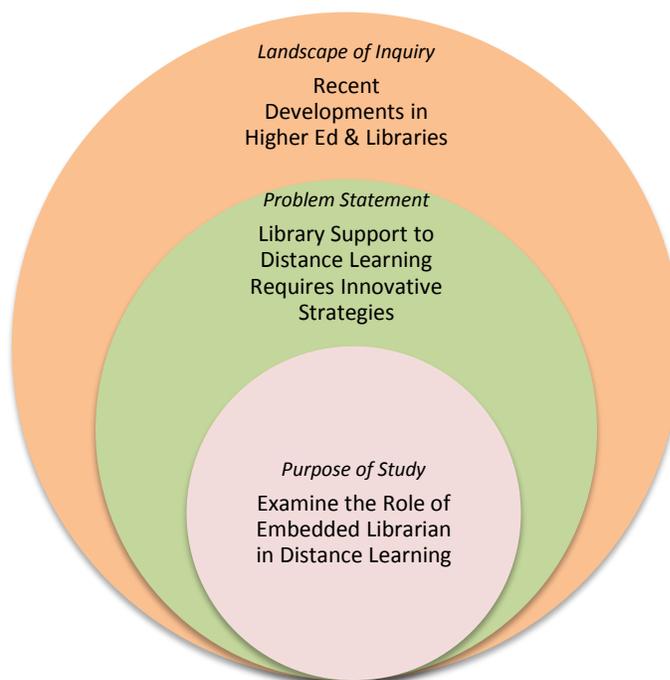
Integral to the academic core of higher education, academic libraries are vibrant centers of inquiry, intellectual development, and information exchange. Offering a dynamic blend of traditional and digital resources via face-to-face and virtual assistance, the 21st century academic library reaches out across and beyond campus boundaries to support learners without regard to time or place. As higher education’s distance learning offerings expand and the numbers of distance learners increase, academic libraries face greater challenges in providing the broad array of resources, services, and instruction to distance learners equivalent to traditional learners. Innovative strategies are required to ensure distance learners receive the personal attention given to face-to-face learners. Some academic libraries have implemented an embedded librarian model to strategically support online learners. A librarian embedded in online courses serves as the personal librarian for those students. In keeping with the academic library mission of supporting the teaching, learning and scholarship of students and faculty, the embedded librarian reaches beyond the library walls and campus boundaries to assist and support the academic endeavors of online learners and their instructors.

Despite the growing adoption of the embedded librarian model, little qualitative research has focused on student and instructor perceptions of the work of the embedded librarian. As the primary clients, instructors and students are ideal sources of information about the embedded librarian. Anecdotal reports of the embedded librarian’s work are insufficient, and the formal research is limited in scope. Academic librarians need a

deeper understanding of the role of the embedded librarian as observed first hand by online instructors and students. Instructor and student perceptions of the work of the embedded librarian will guide efforts to continually enhance academic library support to online learners.

Figure 1 illustrates the context for this qualitative research study. This research is set in a landscape of recent developments in higher education and academic libraries characterized by changes in technology, student demographics, information needs, and instructional delivery. Within that dynamic environment, academic libraries are committed to providing equivalent support to face-to-face learners and distance learners. The challenges created by this pledge require innovative solutions. One innovative strategy for supporting distance learners, the embedded librarian, is the focus of this qualitative research.

Figure 1. Landscape of Inquiry, Problem Statement, and Purpose of Study



Purpose of the Study

The purpose of this study was to gain a deeper understanding of the role of the embedded librarian in supporting online learning. Specifically, this research examined instructor, student, and librarian perceptions of the work of the embedded librarian in four online courses.

Research Questions

The researcher gathered data from instructors, students, and a librarian in four online courses to answer three research questions:

1. What is the instructor's perception of how the embedded librarian works in an online class?
2. What is the student's perception of how the embedded librarian works in an online class?
3. What is the librarian's perception of how the embedded librarian works in an online class?

Significance of the Study

As distance learning programs in higher education expand and the number of distance learners increase, the academic library must provide services and resources comparable to those provided to traditional learners. The embedded librarian model is one strategy implemented to ensure full academic library support is provided to distance learners. This qualitative study contributes to the body of knowledge about the work of embedded librarians, including the value of, challenges to and future enhancements for embedded librarian programs.

CHAPTER II: REVIEW OF THE LITERATURE

The review of literature was instrumental in understanding the background, development, and implementation of the embedded librarian model in distance learning. Literature describing academic library support to distance learners in general provided the broad framework for this study. The literature that focused specifically on embedded librarian models implemented in academic libraries was particularly helpful, though not as plentiful as material about academic libraries and distance learning in general. Seven embedded librarian models currently in practice were selected from the literature for in depth examination. These seven examples generated information about the characteristics of embedded librarian models including the type of institution, courses, and students supported; the librarians' activities, assistance provided, and technologies used; and lessons learned for future implementations. The literature provided the researcher with insights that helped narrow the focus of the qualitative study to examining instructor, student and librarian perceptions of the role of the embedded librarian in online courses.

Embedded Librarian Defined

Several academic libraries have enhanced their distance learning communities by implementing an embedded librarian model that facilitates direct interaction between students and librarians regardless of physical proximity. Dewey's (2005) metaphor of the 'embedded librarian' was "inspired by the recent phenomenon of embedding journalism into various military sectors during the Iraq war and its aftermath" (pp. 5-6). Hedreen (2005) concurred, writing that

The Iraq war brought us the concept of "embedded journalists". Now we have the concept of "embedded librarians". An embedded journalist is supposed to have better access to a story; an embedded librarian provides better access for students to him/herself and to the library's resources. (Blog, para. 1)

“Embedding requires more direct and purposeful interaction than acting in parallel with another person, group, or activity. Overt purposefulness makes embedding an appropriate definition of the most comprehensive collaborations for librarians in the higher education community” (Dewey, 2005, p.6). According to Dewey, the librarian embedded in teaching, learning, and research performs many roles and is integrated throughout campus: in spaces, research, events, teaching, fundraising, and governance. The embedded librarian is ever-present to support the instructor and the students. The embedded librarian works with the faculty member during course planning, identifying resources related to course content as well as integrating information literacy objectives. Throughout the course, the embedded librarian assists students in clarifying research topics; identifying resources to use for research; selecting and using appropriate databases; determining authenticity of sources; avoiding plagiarism; citing sources correctly; organizing research results; and creating presentations of research. In short, the librarian embedded in a course provides a full range of planning, research and information literacy support to students.

While the term “embedded librarian” is relatively new, Konieczny (2010) demonstrated that “the practice of librarians working as an integral part of a group is not a novel concept” (p. 47). The embedded librarian is an instructional partner in the course, a co-instructor providing information literacy and technology guidance to students (Figa

& Bone, 2009). Kesselman and Watstein (2009) described the embedded librarian as one who maintains a physical presence in an academic department, holding office hours, attending department meetings, and easily accessible to students and faculty. They underscored the concepts of integration and collaboration, asserting that “if our services are to remain relevant, and if we are to remain responsive to our users’ diverse information, reference, and research needs, we envision a future in which embedded librarians – and embedded librarianship – are the norm rather than at the forefront” (pp. 395-396).

The embedded librarian model enriches support to instructors and students in both face-to-face and distance learning environments. The responsibilities of the librarian embedded in distance learning courses reflect the professional competencies for reference and user services librarians established by the Reference and User Services Association (American Library Association, 2003). In addition, the embedded librarian is expected to meet the Association of College and Research Libraries (2007a) “Standards for Proficiencies for Instruction Librarians and Coordinators.” Among the 12 categories of proficiencies for instruction librarians, three categories are particularly cogent for the librarian embedded in distance learning: information literacy integration skills, instructional design skills, and teaching skills.

In the category of information literacy integration skills, the effective instruction librarian “collaborates with classroom faculty to integrate appropriate information literacy competencies, concepts, and skills into library instruction sessions, assignments, and course content” (ACRL, 2007a, section 5.2). In the instructional design skills category, the effective instruction librarian “collaborates with classroom faculty by

defining expectations and desired learning outcomes in order to determine appropriate information literacy proficiencies and resources to be introduced in library instruction” (ACRL 2007a, section 6.1) and “integrates appropriate technology into instruction to support experiential and collaborative learning as well as to improve student receptiveness, comprehension, and retention of information” (ACRL 2007a, section 6.7). In terms of teaching skills, the effective instruction librarian “modifies teaching methods and delivery to address different learning styles, language abilities, developmental skills, age groups, and the diverse needs of student learners” (ACRL, 2007a, section 12.2).

Matthew and Schroeder (2006) endorsed the “embedded librarian idea, which involves incorporating library instruction into an online class” (p. 61). According to Tumbleson and Burke (2010), “Embedded librarians realized that research action no longer swirls around the reference desk nor the library Web site, but in students’ online learning space otherwise known as course management systems” (p. 974). Kvenild and Calkins (2011) referenced early embedding initiatives “developed as a response to the library instruction needs of distance learners” (p. vii). The embedded librarian is considered as an effective model for supporting online courses, both synchronously and asynchronously.

Distance Learning Embedded Librarian in Practice

Kearley and Phillips (2004) described embedded librarians supporting online courses at the University of Wyoming. York (2006) initiated an embedded librarian model for online courses at Middle Tennessee State University in 2004. Framingham State University, the University of Rhode Island, and Central Missouri State University experimented early on with embedding librarians in online classes (Herring, Burkhardt,

& Wolfe, 2009; Ramsay & Kinnie, 2006; Schroeder, 2011). Seven other examples of the embedded librarian model are found at Athens State University (Herring, Burkhardt, & Wolfe, 2009), Bucks County Community College (Hemmig & Montet, 2010), Community College of Vermont (Matthew & Schroeder, 2006), Ferris State University (Konieczny, 2010), George Washington University (Sullo, Harrod, Butera, & Gomes, 2012), Miami University, Middletown (Burke, Tumbleson, & Frye, 2010; Tumbleson & Burke, 2010), and University of North Texas (Figa & Bone, 2009). The embedded librarian models developed at these seven institutions were described in the literature and served as a foundation for this qualitative study.

Online embedded librarian model at Athens State University. Herring, Burkhardt, and Wolfe (2009) summarized the embedded librarian program established in 2007 at Alabama's Athens State University to teach information literacy skills and provide research assistance to distance learners. A reference librarian who was assigned to work with a faculty member was designated as a teaching assistant in the course management system. The librarian had access to the course syllabus, class list, assignments, course materials, and communication tools. With the authority to post materials to the site, the librarian participated in introductory announcements; created an "Ask Your Librarian" discussion forum; created and posted instructional documents and video instruction sessions; and provided assistance through the discussion forum, telephone, and e-mail. Originally developed for distance education and off-site classes, the embedded librarian program was adopted by blended and on-site classes as well.

Usage data demonstrated a growth in the embedded librarian program from eleven classes and three librarians participating in fall 2007 to 64 classes and four

librarians participating in spring 2009 (Herring, Burkhardt & Wolfe, 2009). While lacking formal research about the program's effectiveness, its growth was perceived as an indicator of success and the program continued. Limited staffing necessitated some adjustments, however, and ultimately Athens State University decided to focus its program only on courses with a formal research component (Herring, Burkhardt & Wolfe, 2009).

Online embedded librarian model at Bucks County Community College.

Bucks County Community College (BCCC) in Pennsylvania offered online courses beginning in the 1990's. A well-established commitment to customized information literacy emphasizing student leaning and customized presentations existed, however no information literacy instruction was offered for online courses (Hemmig & Montet, 2010). Recognizing the gap in service, an information literacy librarian and online learning librarian collaborated to develop information literacy support to distance learning students modeled after the Community College of Vermont (see below) online embedded librarian program. The Bucks County Community College 2008 pilot had two core elements: 1) space in the course WebCT pages for library research discussions, moderated by embedded librarian; and 2) web-based tutorials related to specific course assignments. In spring 2008, the pilot was tested in an Introduction to Psychology course.

To prepare for their new roles, the librarians learned WebCT and screen capture video software (Adobe Captivate). They were given the role of teaching assistants within the course management system (CMS), allowing them to create discussion topics and post Web links, without full privileges to "build" the course. Through the CMS, the librarians introduced themselves; posted library tutorials; created assignment-based

discussions; and encouraged students to post questions. The librarians monitored the library discussions for about three weeks from the day the research assignment was posted to a few days after assignment was due. Hemmig and Montet (2010) pointed out that the pilot project did not include any formal assessment, however the discussions were monitored, data on use of links to tutorials was collected, and the course instructor commented on the quality of student work. Although students in the pilot did not use the discussion board and only a few viewed the tutorials, the instructor was pleased with quality of the submissions and believed that the information literacy component of the course contributed to student success.

Following the pilot, Bucks County Community College launched the “Embedded eBrarian Program” in summer 2008. Using the same format as the pilot, the Embedded eBrarian was integrated into several courses including Effective Speaking, Introduction to Drama, Introduction to Psychology, English Composition, and Integration of Knowledge. A migration from WebCT to Blackboard[®] Vista did not cause any major problems. Librarians enhanced their online introductions with photos and personal information so that students could get to know them and become comfortable contacting them. Some students contacted the librarians via direct e-mail rather than posting on the course discussion board. Instructors designated differing roles for the librarian in the course management system. Some instructors were more comfortable with librarian in the “student” role. One instructor preferred that the librarian be an “instructor/designer,” permitting the librarian full access to post content on main course pages (Hemmig & Montet, 2010).

At the conclusion of the BCCC 2008 summer program, several lessons were learned. Tutorials required continuous revision to reflect changes in library and institutional web sites or database interfaces. Some tutorials contained too many segments that were at times irrelevant to the students' needs. Hemmig and Montet discovered that the amount of time required for monitoring the online courses "precluded the use of part-time library faculty as Embedded eBrarians. However, part-time librarians could be used to create new tutorials" (p. 663). The tutorials developed were made available to everyone through the library's website. While the Embedded eBrarian program continued to grow in popularity, the librarians

recognized that the means of presenting library resources and services were somewhat perfunctory, incomplete, and although considerate of both the user and the library system, little considered the student's experience of connecting with the library. A means needed to be found of collocating and augmenting the library content in a way that would provide a virtual experience of the library that encouraged individual search strategy generation in each student. (Hemmig & Montet, 2010, p. 666)

Among the improvements, LibGuides were selected as a framework for creating learning objects designed for specific assignments. The LibGuides included links to tutorials, videos, the library catalog, chat reference, and databases.

Finally, Hemming and Montet (2010) admitted that the Embedded eBrarian program needed a formal assessment. They anticipated pending revisions in the library's assessment of information literacy in general and expected "the results of this work will then be applied to assessment of the Embedded eBrarian program" (p. 668).

Online embedded librarian model at Community College of Vermont. The Community College of Vermont (CCV), with twelve campuses located throughout the state and only five full time equivalent librarians, launched an electronically based integrated library instruction model for its online students by utilizing an embedded librarian, that is, a librarian who works in partnership with the online course faculty member to support the research process (Matthew & Schroeder, 2006; Schroeder, 2011). In spring 2004, the first semester of the program, the embedded librarian led an online discussion forum through the course management system used for the class. The librarian provided instruction, posted tips about narrowing topics, linked to databases, and answered questions related to the students' research such as how to select appropriate databases and how to use correct citation format. During following semesters librarians and faculty expanded the program to include additional innovative uses of technology such as a weekly "Ask the Librarian" thread tied directly to a capstone project. In some courses the embedded librarian entered the online class during the weeks of the research assignment, working extensively within the timeframe when the students could apply the library instruction directly to their projects. Although formal assessment of the embedded librarian program did not exist, encouraging anecdotal comments included one professor's accolades, "the students you helped in my marketing class had much better projects than those who did not benefit from your expertise. Thank you!" (Matthew & Schroeder, 2006, p. 62).

The embedded librarian program grew from two courses in the spring 2004 pilot to 91 in spring semester 2010 (Schroeder, 2011). Between 2004 and 2010, embedded librarians served 839 courses. The embedded librarians served nearly all disciplines,

although English courses have been the heaviest users, with biology a close second. The CCV librarians capitalized on the success of the embedded approach and collaborated with faculty who were learning how to teach online, introducing those faculty to the embedded librarian concept.

During the growth of the embedded librarian program, three institutional changes occurred that increased the use of embedded librarians. A First Semester Seminar was instituted in 2008 as a requirement for all incoming degree students and included information literacy instruction. Rather than providing face-to-face instruction for these courses, the librarians developed foundational information literacy content that would be delivered to all the seminars via Blackboard®. In addition, Blackboard® was activated for all courses, both face-to-face and virtual, so all faculty and students could access research tutorials, subject guides, and other relevant library resources. At the same time, librarian travel to campuses throughout the state was eliminated due to budget constraints, and the embedded librarian model was deemed ideal for supporting the remote learners (Schroeder, 2011).

The Community College of Vermont program flexibly addressed challenges such as staff reductions, elimination of funds to support librarian travel, and the institution of a freshmen seminar that required library instruction. The challenges were compounded by the unintended consequences of success. CCV did not have enough librarians to provide the embedded service to every online class, and some faculty members had to be turned away. Innovative approaches to expand the embedded librarian model were developed to mitigate the shortage of librarians. Portals to online resources, tutorials, and instruction

related to broad curricular areas were created and enhanced by discipline-based discussion forums, videoconferencing, and NetMeeting technologies.

The embedded librarians discovered other successful strategies such as posting their pictures in the initial welcome message and referring to students by name in posts. They identified enhancements for the program through continual revision of online outreach strategies, creation of new tutorials, experimentation, and anecdotal feedback. The librarians and faculty determined that the model worked best when 1) the librarian worked with students on specific research assignments; 2) “Ask a Librarian” discussions were incorporated into specific weekly assignments; 3) faculty members promoted student interaction with the embedded librarian; 4) “Ask the Librarian” forum operated on a discussion board forum rather than via e-mail (Matthew & Schroeder, 2006).

Faculty members were first surveyed in 2008 to assess the Community College of Vermont’s embedded librarian program. Just over 50% of the faculty responded to the five-question survey, and “overall satisfaction with the program averaged 4.63 with 5 being the highest” (Schroeder, 2011, p. 76). A fall 2009 survey of faculty showed that 89.3% of the respondents had used the embedded librarian service. Of those who used the embedded librarian service, “76% were very satisfied, 20% satisfied, and only 4% not satisfied” (Schroeder, 2011, p. 76). The success of the Community College of Vermont embedded librarian program resulted from close collaboration between the librarians and the faculty, innovation and experimentation, and commitment to serving students (Matthew & Schroeder, 2006). Schroeder (2011) summarized that “the embedded librarian program and enhanced online presence provide students with a personal connection to a librarian as well as library resources and instruction in students’ preferred

online environment. This combination best serves the needs of the 21st century learner” (p. 77).

Online embedded librarian model at Ferris State University. The embedded librarian program was developed at Michigan’s Ferris State University to serve distance learning students in nine allied health programs and the College of Pharmacy. It is not unusual for clinical librarians and informationists in the health sciences to be embedded with faculty and practitioners in face-to-face research and clinical teams. Konieczny (2010) praised “academic librarians who are acting as key collaborators by providing significant integrated support within courses where they are not the primary instructor” (p. 48). Konieczny added, the move to “embedded librarianship in online classes is an exciting and rewarding venture that will help to bring library services and resources into the users’ online classroom” (p. 56).

At the start of the Ferris State University program, the embedded librarian received training in the Blackboard[®] course management system as both designer and end-user to learn the course management system’s functionality and the limitations of technology. Adobe[®] Acrobat[®] Connect Pro (for web conferencing), chat board, and Voice Over Internet Protocol (VOIP) training was also available.

A fully online Master’s of Nursing program and a Health Care Systems Administration program with numerous online courses were ideally suited for the embedded librarian model. Both programs had “significant research components” and close relationships were already established, easing “required communication that is needed to establish roles, needs, priorities, and expectations” (Konieczny, 2010, p. 50).

The embedded librarian program was marketed to faculty through e-mail, newsletters, institution-wide announcements, and the library's web pages. The librarian communicated directly with instructors, speaking at new faculty orientation, department meetings, and department heads and deans meetings. Word-of-mouth marketing by satisfied users promoted the program, and librarians met with faculty participating in online course training

The embedded librarian's role in Blackboard® varied depending on professor and ranged from instructor to designer, teaching assistant, and student. The assigned role dictated the tasks the librarian could perform, such as posting content and links and monitoring discussions, all of which affected the librarian's time commitment in that aspect of the embedded program.

The course management system served as the hub for communication and information sharing between the librarian and the students. The librarian created a customized library folder on Blackboard® with links to library tutorials; tips for using databases; contact points for library help (online chat, e-mail, phone); subject-specific guides; and course-specific web pages. Through the librarian's discussion board, students asked questions about research strategies and library resources. Konieczny (2010) described an assignment designed by the librarian and instructor in which students posted links to articles from library databases and posed questions for classmates to answer. The librarian checked students' postings for proper linking to ensure classmates could access the article. Supplementing the course management system, the librarian used synchronous webinars to teach information literacy skills. The librarian's was desktop

visible so students could observe how to navigate through searches, and discuss research techniques via chat board, Voice over Internet Protocol (VOIP), or teleconferencing.

Konieczny (2010) advised that the role and responsibilities within the course and in monitoring discussion boards must be clear, including determining who will respond to which types of questions. She recommended that the librarians “be helpful without being overly helpful” (p. 54). Another observation was the need to indicate when discussion boards would be monitored so expectations for response time are clear. Embedded librarians were urged to monitor and modify course content and technology as the course progressed. Further, if possible, it would be beneficial for the librarians to meet with the students face-to-face at the beginning of the course. Otherwise, a virtual meeting for welcome and introductions was encouraged.

Like several other embedded librarian programs, the Ferris State University model lacked a formal assessment and relied on anecdotal evidence. Konieczny (2010) reported, “although no formal survey of students’ impression of the discussion board has been undertaken, from students’ posting it appears that they find it to be quite beneficial” (p. 55). The embedded program assisted in creating an online learning community in which students converse with and help each other online. Additionally, repeat instructors requesting that a librarian monitor discussion boards “indicates that the service is of value to them” (Konieczny, 2010, p. 55).

Online embedded librarian model at George Washington University. George Washington University’s Himmelfarb Health Sciences Library in Washington, D.C. serves three schools and 5,000 students, faculty, staff, and affiliated medical faculty. In creating their embedded librarian program, the librarians reviewed the Ferris State

University model and a consortium-based Master of Science in Nursing program. The Himmelfarb reference librarians have been embedded in distance learning courses since fall 2009. While all library services and resources have been available to distance education students “few students are aware of them and even fewer take advantage of them” (Sullo, Harrod, Butera, & Gomes, 2012, p. 27).

The program started with one librarian embedded in one course. The librarian was designated a teaching assistant in the course management system. The librarian’s contact information was added to syllabus and placed in the “faculty information” section in Blackboard[®]. The discussion board hosted an “Ask the Librarian” section and the librarian provided individual attention to students. The students contacted the librarian via e-mail or discussion board. Within a year, the program expanded to embedding librarians in 16 online nursing and health sciences courses.

To guide their instruction, Himmelfarb librarians surveyed students in all 16 courses to identify the types of library research skills the students needed to strengthen. Survey results were grouped into seven categories: using Himmelfarb resources; off-campus access to Himmelfarb resources; locating a book; locating a journal article; general research guidance; citation management/RefWorks; and other. According to Sullo, Harrod, Butera, and Gomes (2012), the survey responses led to several program modifications such as providing online instruction at various points throughout courses; adding Elluminate Live synchronous sessions for basic library research tools; and posting links to library research guides, RefWorks tutorial, and American Psychological Association (APA) style sheets. In addition, the librarians were asked to expand their embedded support by teaching Excel Basics classes.

Sullo, Harrod, Butera, and Gomes (2012) explained that, through observations of work in Blackboard® and the survey of students' competencies, the librarians identified best practices in the areas of planning, introductions, and technology use. Instructor introduction of the librarian underscores the librarian's importance in the class. Librarian participation in course planning clarifies roles and expectations. Leveraging the abundant technology through discussion boards, e-mail, Skype™, telephone, Elluminate Live, and Adobe® Connect™ strengthens interaction and communication. Librarians support students where, how, and when needed by incorporating web-based support such as links to tutorials on database searching, finding journal articles, bibliographic tools, and citation styles; providing synchronous database searching instruction; and offering online office hours.

Students and faculty have not formally evaluated the effectiveness of the Himmelfarb embedded librarian program, however Sullo, Harrod, Butera, and Gomes (2012) reported "faculty members have expressed delight in the library's services and are excited about having the opportunity for librarians to participate in more DE courses" and student comments such as, "what a wonderful thing to have you, a dedicated resource to this class" (p. 32). Beginning in fall 2011, the Himmelfarb librarians plan to survey students before and at completion of courses to determine their experiences in using library resources, opinions of embedded librarian model, suggestions for enhancing library support to online courses.

Online embedded librarian model at Miami University, Middletown, OH.

Miami University, Middletown is a state-assisted, open access, commuter regional campus of the Miami University of Ohio. An embedded librarian program was launched

in fall 2008 with three librarians supporting 10 faculty teaching 19 sections of 13 different courses, and serving 272 students. Lower and upper division English, communication, religion, computer science, nursing course hosted an embedded librarian.

In launching the embedded librarian program, instructors were asked about the information literacy needs and expectations for their courses. They indicated if they wanted the librarian only at start of course, during the research component, or throughout semester. Faculty enrolled their librarian in Blackboard[®] as instructor or “course builder” and eventually an “embedded librarian” button was added to Blackboard[®]. Embedded librarians obtained course assignments in order to customize content and built a sample Blackboard[®] site to demonstrate to faculty what was possible. Librarians chose a variety of strategies for organizing their content, and content could be easily migrated from one course to another when relevant. The librarians visited the first class in person when possible, which often created additional demand for librarian’s services. Burke, Tumbleson, and Frye (2010) noted that the students were particularly receptive “when they knew that the librarian had an understanding of the course syllabus and course assignments” (p. 55).

Librarians marketed the program to faculty via email, library blog, newsletters, and personal invitations. Faculty spread the word, faculty returned, and the responses to the marketing were strong. Students appreciated the instant, easy access to relevant information, remarking, “no more wandering aimlessly on the Internet or even around the library Web site” (Tumbleson & Burke, 2010, p. 974). Librarians characterized the program as a “proactive response to information literacy. It maximizes impact, minimizes costs, and is versatile. Upper and lower division courses, all disciplines, and

any course format, whether traditional, online, or hybrid, can benefit” (Tumbleson & Burke, 2010, p. 974). At the conclusion of the pilot program, students were invited to complete a web-based survey evaluating their experience with and offering suggestions for the embedded librarian program. Only 6.25% of the students surveyed responded, however 70% of them indicated their desire to have an embedded librarian in future classes. Faculty participating in the pilot were asked to complete a web-based survey that asked about their perceptions of the students’ use of the program. Forty-four percent of the participating faculty responded, and 100% of those responding reported they would collaborate again with an embedded librarian (Burke, Tumbleson, & Frye, 2010).

In the fall and spring of 2009, formal and informal methods were used to assess the embedded librarian program at Miami University, Middletown. Librarians informally discussed their experiences, while students and faculty completed separate web-based surveys. Tumbleson and Burke (2010) found that 54% of the surveyed faculty responded to a 16-question survey and were “largely satisfied with embedded librarian experience” (p. 978). In fact, 100% of the responding faculty either agreed or strongly agreed “to statements on their favorable impression of the collaboration, their interest in repeating the experience in the future, and their willingness to recommend embedded librarians to colleagues” (p. 978). The faculty suggested three areas for growth and improvement: students properly evaluating web sites; librarians notifying class of technical difficulties; and students correctly citing sources.

While only 5.7% of the students surveyed responded to the 11 questions, they shared a “generally positive view of embedded librarian” (Tumbleson & Burke, 2010, p. 979). The students indicated a preference for links to library related materials placed

next to assignments rather than in separate librarian folder, and for e-mail to communicate with librarian.

Many instructive lessons were learned through the initial implementation of the embedded librarian program at Miami University, Middletown. Student contact with librarians increased via e-mail, instant messaging and in person, indicating that the librarians were connecting with students. The embedded program allowed librarians to focus on different steps in research process at just the right time because they had the syllabus and access to the course, students, and faculty through Blackboard®. The embedded librarian was positioned for combining face-to-face and online support when possible and it was deemed beneficial if librarian could meet with each class in person at least once at start of semester. Of critical importance was realizing the time consuming impact on the workload of librarians. The embedded librarian concept was regarded so highly that it was adopted for “embedded advisor” and “embedded technologist” programs on the campus (Burke, Tumbleson, & Frye, 2010, p. 60).

Informal discussions among the Miami University, Middletown embedded librarians led to a collection of sustaining practices, summarized by Tumbleson and Burke (2010) as:

- Regularly assessing faculty and students regarding embedded librarian model
- Creating new content and approaches to teaching information literacy online
- Collaborating with other libraries and librarians
- Collaborating with other campus/university units (e.g. Center for Teaching and Learning)

- Offering new library services, in addition to embedded librarian (e-reserves; scanning; digitizing library-owned videos for streaming)
- Collaborating with faculty and focus on information literacy
- Commitment to embedded librarianship, supported by changes in library policies and processes.

Tumbleson and Burke (2010) captured the overall success of the Miami University, Middleton program stating “Blackboard® embedded librarianship has become an integral mode of delivering library resources and services to university stakeholders” (p. 984).

Online embedded librarian model at University of North Texas. The University of North Texas, the largest provider of distance education in Texas, developed a program to integrate a librarian into the online classroom as a strategy for delivering equitable library support to on-campus and distance learners. Named the “Librarian in the Classroom” (LITC) service, it was introduced in 2005 and first implemented in two graduate level courses in the School of Library and Information Science. In this model, a librarian with relevant subject expertise provided customized service to the instructor and online students via the course management system. Figa and Bone (2009) described the embedded librarian as one who “moves beyond service provider to collaborative partner by working closely as part of the teaching team and engaging with students in need of research, guidance, and information literacy development” (p. 16).

Figa, Bone, and MacPherson (2009) conducted a study to assess the Librarian in the Classroom (LITC) model during four academic semesters in 2005-2007. The LITC model was implemented in several fully online and hybrid courses in the Library and Information Sciences program. The students were administered an optional pre-LITC

survey of eleven open-ended questions to determine their “level of experience within the [library and information sciences] program, level of comfort with the library resources, benefits of having a LITC, and thoughts on the best types of contact with the librarian” (Figa, Bone, & MacPherson, 2009, p. 79). A post-LITC service questionnaire of sixteen multiple choice and open-ended questions was emailed to each student to gather information about their perceptions of the LITC program, preferred modes of communication, and information needs. The instructor and embedded librarian were interviewed in one-hour semi-structured interview sessions to learn about specific aspects of the LITC interactions and to determine their “viewpoint on the effectiveness of the LITC component as implemented” (Figa, Bone, & MacPherson, 2009, pp. 97-98).

Results of the research demonstrated that 95% of the students rated the LITC service as very positive or positive; 99% responded that the bulletin board was a good forum for communication; 93% preferred using the discussion board for interacting with the librarians, and 95.6% “indicated they benefit from viewing other students’ posts and the replies to them” (Figa, Bone, & MacPherson, 2009, p. 82 – 83). The instructor testified that the students greatly benefitted from “full-time library staff integrated into the classroom to help with issues that would be better addressed by insider-librarian knowledge and problem-solving” (Figa & Bone, 2009, p. 16). The instructor and librarian “firmly believe LITC enriches the distance student’s learning experience” (Figa, Bone, & MacPherson, 2009, p. 91). The librarians praised the program for helping alleviate student anxiety about asking questions and using library resources.

Figa, Bone, and MacPherson’s (2009) research highlighted practices for future Librarian in the Classroom efforts and recommended “faculty should develop an

implementation plan that consists of goals and objectives for the service, including the functions expected of the librarian” (p. 93). Information about the LITC should be included in the course syllabus and assignments, and faculty should monitor the LITV discussion forums along with the librarian. Based on the research results, Figa, Bone, and MacPherson (2009) indicated the librarian would benefit from working with a faculty member “with a strong interest in pedagogy and a progressive approach to service to their students” (p. 94). Additional recommendations for the librarian included understanding the course objectives and assignments; coordinating a pre-assessment survey to understand students’ information literacy skills, abilities and needs; providing students with a list of relevant databases; monitoring and reporting technology and access issues; and encouraging student communication (Figa, Bone, & MacPherson, 2009).

Summary of seven embedded librarian models in practice. Athens State University implemented an electronically embedded librarian program in 2007 serving courses in the arts, sciences, business and education, using the Blackboard[®] learning management system platform. The Athens State University program lacked formal assessment, however success was inferred from the program’s growth.

The Bucks County Community College Embedded eBrarian program, piloted in 2008 and launched in 2009, supported courses in psychology, communications, drama, English and a specialized course called “Integration of Knowledge”. The Embedded eBrarian program was not formally assessed, although discussion board topics, comments from instructors, and statistics on the use of tutorials provided indirect indication of success.

The Community College of Vermont (CCV) started an embedded librarian program with two courses in 2004 to serve distance learners throughout the state of Vermont. Also utilizing the Blackboard® platform, the program supported 839 courses over the seven-year period between 2004 through 2010, across nearly all disciplines. In 2008 CCV started to formally survey participating faculty about the embedded librarian program, and satisfaction with the program was high. Neither students nor librarians were asked to formally assess the CCV program.

At Ferris State University, the Blackboard® based embedded librarian program was used in the online nursing and health care administration programs. Once again, there was no formal measurement of the embedded librarian program's success. Informal student and instructor comments, number of repeat customers, and nature of discussion board interactions provided some insight to the effectiveness of Ferris State University's program.

The embedded librarian program initiated at George Washington University's Himmelfarb Library in 2009 was designed to support courses in nursing, medicine, and health sciences using the Blackboard® learning management system as a vehicle. Although implemented without a formal assessment plan in place, a survey was planned for fall 2001 to ascertain student perceptions of the value of the embedded librarian model. No mention was made of plans for assessing instructor and librarian perceptions.

Miami University in Middletown, Ohio launched its embedded librarian program in 2008 for lower and upper division undergraduate courses in English, communications, religion, computer science, and nursing. The Miami University program included formal and informal assessment from the beginning. Faculty and students were administered

separate web-based surveys and librarians participated in informal discussions to evaluate the embedded librarian program.

At the University of North Texas, the Librarian in the Classroom (LITC) embedded librarian model was implemented in 2005. The LITC program, serving courses in the School of Library and Information Sciences, benefitted from formal a assessment plan. Students were surveyed at the beginning and completion of their LITC courses to determine their library skills and opinions of the LITC program. The instructor and librarian were interviewed following the courses. Overall results from the assessments were positive and yielded important recommendations for future practices.

Despite institutional differences, the seven embedded librarian models presented reflect many similar characteristics, programmatic activities, and lessons learned. Table 1 indicates the characteristics of the online embedded librarian models. Similar across all instances, the librarian was embedded within the course management system used for course delivery. Table 2 lists the activities of the embedded librarians. In all instances, the embedded librarians engaged in course management system discussion boards and provided assistance via e-mail, telephone, and other communication means. Table 3 outlines lessons learned and features to consider for an effective embedded librarian model.

Some of the similar lessons learned across most of the models included the need to use a variety of instructional methods and materials and the importance of clarifying roles and expectations of the librarian. Program assessment across the models described, however, is weak. Formal assessment, including determination of student, instructor, and

librarian perceptions about the embedded librarian programs, is inconsistent and in some cases non-existent, revealing an important gap in the research.

Table 1

Online Embedded Librarian Models – Characteristics

	ASU	BCCC	CCV	FSU	GWU	MUM	UNT
Institution Type	2-yr upper division; bachelor's degrees	Comprehensive community college; 3 campuses	Community college; 12 locations	Master's comprehensive; some Associate & Doctoral	Research I	Regional, commuter campus	Doctoral granting, public, comprehensive
Distance Ed History	1990's	1990's	--	--	--	--	--
Embedded Librarian Program	2007	Pilot – spring 2008; launched fall 2008	2004	Online allied health courses	2009; Health Sciences Library	2008	2005; School of Library & Info Sciences
Program Name	Electronically embedded librarian	Embedded "E-Brarian"	Embedded librarian	Embedded librarian	Embedded librarian	Embedded librarian	"Librarian in the Classroom"
Courses Served	Arts; Sciences; Business Education	Psychology; Comm.; Drama; English Comp; "Integration of Knowledge"	English; Biology; Psychology; First Year Seminar; others	MS Nursing; Health Care Systems Admin.	Nursing; Medicine & Health Sciences	English; Comm.; Religion; Computer science; Nursing	Library & Information Sciences
Program Accessed	Instructor requested or librarian suggested	Instructor requested; online request form	--	Librarian proposed model to instructors	Librarian & instructors contacted each other	--	Librarian initiated

CMS	Blackboard®	WebCT: Blackboard®	Blackboard®	Blackboard®	Blackboard®	Blackboard®	WebCT
Librarian Designation in CMS	Teaching Assistant	Teaching Assistant	--	Instructor; designer; teaching asst.; student	Teaching Assistant	Instructor or “course builder”; embedded librarian button created in Blackboard®	Librarian in the Classroom
Embedded librarians	3-4	1 or 2	3	1	1+	3	1
Assessment	No formal assessment	No formal assessment; monitor discussion topics, use of links to tutorials; instructor feedback on quality of submissions	Survey of faculty	No formal survey of students; discussion board interactions; comments from students and instructors; repeat customers	No assessment; 2011 plans for pre- & post-survey; comments from faculty	Web based survey of faculty; web based survey of students; informal discussion with embedded librarians	Pre-test & post-test of students; interviews of instructor & librarian
Other factors		Strong commitment to customized info lit		Primary service - monitoring discussion boards		“Project Information Literacy” framework	Largest provider of DE in Texas

Note. Non-reported data indicated by “—”

ASU – Athens State University
BCCC – Bucks County Community College
CCV – Community College of Vermont
FSU – Ferris Statue University
GWU – George Washington University
MUM – Miami University, Middletown
UNT – University of North Texas

Table 2

Online Embedded Librarian Models – Librarians’ Activities

	ASU	BCCC	CCV	FSU	GWU	MUM	UNT
Introductions & Overview	✓	✓	--	--	--	✓	--
Discussion forum in CMS	✓	✓	✓	✓	✓	✓	✓
Instructional documents	✓	✓ LibGuides	✓	✓	--	✓ LibGuides	--
Instructional videos	✓	✓	--	✓	--	✓	--
Tutorials	✓	✓	✓	✓	--	✓	--
Assistance via e-mail, phone, discussion forum	✓	✓	✓	✓ Chat; VOIP; teleconference	✓	✓ Text; F2F; IM	
Blogs, wikis	✓	--	--	--	--	--	--
Research for Instructors	✓	--	--	--	--	--	--
Technologies Used	CMS	CMS; Adobe Captivate; Delicious	CMS; e-mail; videoconferencing; Net Meeting	Blackboard®; Adobe Acrobat Connect Pro; chat board; VOIP	Blackboard®	Blackboard®; Captivate	
Marketing Strategies	--	--	Word of mouth; collaborate with faculty learning how to teach online	Word of mouth; e- mail; newsletters; announcements; library’s web page; direct comm. w/	Word of mouth; “Lunch & Learn”	Word of mouth; e-mail, library blog, newsletters, personal	--

				faculty; dept., chairs' & deans' meetings		invitations	
Design of assignments	--	--	--	Librarian & instructor	--	Librarian & instructor	Librarian & instructor
Technical assistance	--	--	--	Librarian provides	--	--	--
Training for Librarians	--	--	--	CMS	--	--	--
Other Activities	--	--	EL entered some online classes during research assignment	Synchronous webinars for online instruction; Librarians meet w/ faculty at online course training	--	Model Blackboard® site created for instructors to preview; Grants for EL's to offer online info lit forum for faculty	--

Note. Non-reported data indicated by "--"

ASU – Athens State University

BCCC – Bucks County Community College

CCV – Community College of Vermont

FSU – Ferris State University

GWU – George Washington University

MUM – Miami University, Middletown

UNT – University of North Texas

Table 3

Lessons Learned in Online Embedded Librarian Models

Communication	Use different forms of communication (discussion board, e-mail, phone) ¹ Set limits (neither the instructor nor the librarian do the students' work) ¹ Explore using blogs & wikis ¹ Indicate times when discussion boards will be monitored (realistic expectations) ⁴ Meet in person at beginning if possible ^{4,6} Plan with instructor ahead of time ⁵ Online office hours Contact from students increased overall via e-mail, IM, in person ⁶ "Ask the Librarian" best on discussion board rather than e-mail ³
Faculty Role	Faculty support required; encourage students to use librarian ^{1,3} Clarify roles for monitoring discussions & responding to which types of questions ⁴ Instructor introduce librarian ⁵ Instructors asked if they wanted librarian only at start of course, during the research component, or throughout semester ⁶
Technology	Augment library's web site w/ instructional materials ¹ Make Adobe Captivate available to anyone creating tutorials ² Need to collocate and augment library content ² Monitor & modify as course goes along ^{4,6} Leverage technology – discussion board, e-mail, Skype, telephone, Elluminate Live!, Adobe Connect ⁵
Instructional Methods & Materials	Use different tools to reach different types of learners (print, audio, visual, F2F) ¹ Add Elluminate Live! Sessions based on topic identified in question analysis ⁵ Librarian provides feedback to students on assignments ⁵ Share instructional tools with each other ¹

Curriculum & Content	<p>Create materials for use across subject areas¹ Tutorials need to be updated² LibGuides with links to tutorials, video, catalog, chat reference, & databases² Include resources within Blackboard[®] to eliminate need to go back to library homepage; i.e., links to research guides, etc.⁵ Links to database searching, tutorials RefWorks, citation styles, “finding full-text peer reviewed articles”⁵ Synchronous database searching instruction⁵ Place links to library materials next to assignments rather than in separate librarian folder⁶ “Ask the Librarian” incorporated into assignments³</p>
Assessment Methods	<p>Focus on courses with research component¹ Monitor & modify library content as course progresses⁴ Teach Excel Basics class⁵ Improve student evaluation of web site⁶ Improve student citation of sources⁶ Librarians focus on research steps at “just the right time” due to Blackboard^{®6} Best when librarian worked with students on specific research assignments³</p> <p># of classes supported¹ # of students supported Growth in program¹ # of librarians participating¹ Monitoring discussion topic² Database usage data Type of resources used Citations Quality of research paper² Survey of students⁶ Survey of faculty⁶ Anecdotal comments from faculty^{4,5}</p>

	Anecdotal comments from students ^{4,5}
	Anecdotal comments from librarians ^{4,6}
	Usage of links to tutorials ²
	“Currently reevaluating IL assessment in general, to be applied to Embedded E-Brarian program” ²
	Creation of online learning communities for students ⁴
	Future – pre- & post-course survey of students, opinion of EL, suggestions for enhancing library support to online courses ⁵
Other	Time consuming impact on librarian workload ⁶
	Embedded model adopted for “advisor” & “technologist” ⁶
	Effective library support for combined F2F and online ⁶
	Led to expansion of other services to students: e-reserves, scanning, digitizing library-owned videos for streaming ⁶
	Unintended consequences of success – not enough librarians ³

Note. Institution from which comments originated are indicated by superscript number as follows:

- 1 - Athens State University
- 2 - Bucks County Community College
- 3 - Community College of Vermont
- 4 - Ferris State University
- 5 - George Washington University
- 6 - Miami University, Middletown
- 7 - North Texas University

Multi-Library Studies of Embedded Librarians

Complementing the data derived from embedded librarian models described at the seven selected institutions, a few researchers gathered information from multiple programs across many institutions and developed best practices for embedded librarians (Hoffman & Ramin, 2010; Shumaker & Talley, 2009; York & Vance, 2009). Hoffman and Ramin (2010) compiled a set of best practices for embedded librarians from research that combined a case study of an embedded librarian in a single graduate course at the University of North Texas, a mixed methods study of academic librarians who serve online courses at six institutions, and a review of the literature. Hoffman's and Ramin's findings fell into four categories that described the importance of: preparing and developing the service; managing librarian's time; using course management software; and avoiding technical problems.

York and Vance (2009) also sought to examine best practices for embedded librarians. In addition to reviewing the literature, they distributed a 21-question online survey to academic librarians contacted through selected professionally relevant e-mail lists. A total of 159 librarians responded. Analyses of the survey results and a literature review led to seven primary recommendations for embedded librarians: 1) know the campus course management system and its administrators; 2) get a library link in the course management system; 3) go beyond the library link; 4) don't become overextended – recruit some help; 5) be strategic with course selection and time; 6) be an active participant in the class; and 7) market the embedded librarian service.

Shumaker and Talley (2009) conducted research among multiple special library types to identify embedded librarianship models in practice. They defined embedded

librarians as those providing specialized services to their customer groups, contributing “important information in a timely fashion, even anticipating unrealized and unexpressed needs” (Shumaker & Tyler, 2007, p. 2). Shumaker & Tyler (2007) explained, “it is the librarians’ ability to understand the customer group’s goals and problems that make that contribution valuable” (p. 3). Their study focused on members of the Special Libraries Association and examined embedded librarians in a variety of settings including academic libraries. They received 240 survey responses from librarians and then followed up with six site visits to a variety of institutional types including a for-profit professional services firm, a privately held multinational corporation, not-for-profit corporation, a for-profit university, a community college system, and a research university (Shumaker, 2011). Through their examination of a broad spectrum of special libraries, Shumaker and Talley (2009) determined three types of embeddedness: physical embedding, organizational embedding, and virtual embedding. Across all sectors and types of embeddedness, the common themes rated high in importance for embedded librarians were functions related to in-depth research, ready reference, and alerts services. Instruction was rated high in importance only for the academic library environment. Shumaker and Tyler (2007) reported “embedded librarians in higher education have weaker relationships with customers, and in particular with customer managers, than those in other sectors” (p. 17). Only 20% of their 240 survey respondents were from post-secondary academic libraries, however, suggesting the need for more intentional focus on academic library settings, including deeper examination of the embedded librarians’ relationships with faculty.

Although Shumaker and Talley's (2009) study was broader, some of their results are similar to the information gathered by the Hoffman and Ramin (2010) and York and Vance (2009) studies. Furthermore, the results of the three multi-library studies reflected many practices described in the embedded librarian models from the seven institutions summarized in Table 3. The recommended strategies described for embedded librarians in the three multi-library studies are summarized in Table 4.

Table 4

Recommended Strategies for Online Embedded Librarians

Hoffman & Ramin (2010) Academic libraries	York & Vance (2009) Academic libraries	Shumaker & Talley (2009) Special libraries
Preparing and Developing the Service		
Involve other librarians from the beginning; Get buy-in from library administration; Market the service to online instructors; Clearly negotiate librarian's role with the instructor; Get information about the class ahead of time; Be prepared to go outside your subject specialty; Follow up with the instructor	Don't become over-extended, recruit some help; Market the service to faculty	Seek and share assistance with other library staff; Get support of library and customer group management; Develop relationships with customers and group managers; Market services to customers; Be knowledgeable of customers' work or field; Measure outcomes in financial terms
Managing Your Time		
Pilot course assignment deadlines and plan ahead for busy period; Monitor discussion board using e-mail notification or RSS; Check courses at set times throughout the day/week; Save e-mail messages and discussion board posts for future use	Go beyond the [course management system] library link and use e-mail, discussion boards; Be strategic with course selection and time	Provide in-depth research, competitive intelligence, and data analysis services; Share teaching with instructors

Using Course Management Software		
Create a library module open to every online student; Post embedded library's and subject specialist's contact information in the course; Post in a single library-specific or assignment-specific discussion board; Post information proactively; Include visuals in discussion board posts	Know the campus course management system & its administrators; Get a library link in the course management system; Be an active participant in the class, post contact information and communicate directly with students; Go beyond the [course management system] library link and link to specific resources	No mention of course managements system in this study
Avoiding Technical Problems		
Test software and run system check ahead of time; Post trouble-shooting tips; Be prepared with a plan "B"; Have alternatives in place	No mention of providing technical assistance in this study	No mention of providing technical assistance in this study

Need for this Research

The embedded librarian model shows potential to be a key element in the academic success of students in the distance learning environment. Further research is required, however, to develop exemplary strategies and to measure the effectiveness of the model. Sullo, Harrod, Butera, and Gomes (2012) cited the need for additional research about embedded librarian programs in online learning, observing "while much of the literature regarding embedded librarians focuses on the context of the physical environment, only a few academic institutions have moved in the direction of virtually embedded librarians working within the online course management system" (p. 26).

York and Vance (2009) admitted, "best practices are ever-changing and ever-evolving" (p. 207). Hoffman and Ramin (2010) pointed out "currently there is no cohesive guide to developing an embedded librarian service for online courses" (p. 292).

Hoffman and Ramin (2010) indicated a need to determine 1) if student or instructor attitudes toward academic libraries are changed after interacting with an embedded librarian, and 2) what benefits accrue to distance learners by forming a relationship with a librarian. Shumaker and Tyler (2007) declared that high interest in and responses to their study pointed to a call for further research. In particular, they cited the need for further study of the impact of solo librarians on the research results; the development, initiation, and sustainment of embedded librarian services; and comparisons of services provided by embedded and non-embedded librarians.

The seven institutional cases cited in this literature review provide insight to the roles of embedded librarians in academic settings as outlined in Tables 1, 2, and 3. Table 4 summarizes recommended strategies identified by three research teams in multi-library studies. Across all of these studies, however, little formal research methodology framed the data collection. Informal observations and anecdotal evidence led to most conclusions. The studies cited lack qualitative information about the perceptions of students and instructors toward the role of the embedded librarian. None of the investigations included students at all levels, i.e., undergraduate, masters, and doctoral levels. Several of the studies looked at the embedded librarian in a single discipline. The studies focused on the technical and operational aspects of the embedded librarian model. Little attention was given to the embedded librarian's effect on student learning. Table 5 illustrates the limitations of the prior research described in the literature review.

Table 5

Limitations of Prior Research

	Research Focus	Participants	Methodology	Limitations
Athens State University	Multiple disciplines	Upper level undergraduates	No formal methodology	Lacked formal methodology; only upper level undergraduates
Bucks County Community College	Multiple disciplines	Lower level undergraduates	No formal methodology; anecdotal comments; informal observations	Lacked formal methodology; only lower level undergraduates
Community College of Vermont	Multiple disciplines	Lower level undergraduates	Survey of faculty opinions; Anecdotal comments	Lacked student and librarian responses; only lower level undergraduates
Ferris State University	Nursing, health care	Graduate students	No formal methodology; anecdotal comments; informal observations	Lacked formal methodology; only health science disciplines; only graduate students
George Washington University	Nursing, health sciences, medicine	Graduate students	No formal methodology; anecdotal comments	Lacked formal methodology; only health science disciplines; only graduate students
Miami University, Middletown	Multiple disciplines	Lower & upper level undergraduates	Pre-survey of faculty needs; survey of faculty and student opinions;	Lacked formal methodology for librarian feedback

			informal discussions with librarians	
University of North Texas	Library & Information Science	Graduate students	Pre- and post-test of students' information literacy skills and opinion of embedded librarian; interviews with instructor and librarians	Lacked interviews of students; Focus on library science graduate students may weaken validity
Hoffman & Ramin Study	Library and Information Science course; Academic libraries (6)	1 embedded librarian in case study; librarians in six other institutions	Literature review; survey of students in case study; survey of librarians in six other institutions; content analysis of their library websites and forms; email discussions and phone interviews with librarians at six institutions	Case study of a graduate library science course may weaken validity; Researcher was subject of case study
York & Vance Study	Academic libraries	Librarians supporting online courses	Literature review; Survey of librarians	Lacked student and instructor participants
Shumaker & Talley Study	Special libraries	Librarians	Survey of librarians; interviews with librarians	Lacked interviews; Lacked student and instructor participants

Additional research about the role of the embedded librarian in distance learning will strengthen the efforts of academic librarians and benefit the students and faculty participating in distance learning.

Purpose of the study. The purpose of this research was to examine the role of the embedded librarian in online learning and understand how the embedded librarian model works. Specifically, a qualitative approach was employed to understand stakeholders' perceptions of the embedded librarian model as it is implemented in undergraduate and graduate online courses across multiple disciplines in a public comprehensive institution of higher education.

Research questions. The researcher investigated the role of the embedded librarian in online learning by asking the following research questions:

1. What is the instructor's perception of how the embedded librarian works in an online class?
2. What is the student's perception of how the embedded librarian works in an online class?
3. What is the librarian's perception of how the embedded librarian works in an online class?

Significance of the study. This research provides qualitatively derived information about the role of an embedded librarian in online courses. The embedded librarian model is one strategy for providing full academic library support to distance learners. The results of this study will contribute to the recommended practices for implementing an embedded librarian model in distance learning.

CHAPTER III: METHODOLOGY

This qualitative research used case study methodology to understand the role of the embedded librarian in several separate online courses. Merriam (1998) defined the case as “a thing, a single entity, a unit around which there are boundaries ”(p. 27). In this study, each online class examined served as an individual bounded case, per Creswell’s (2005) definition, “separated out for research in terms of time, place, or some physical boundaries” (p. 439). Multiple classes were studied, making this research a multicase study (Merriam, 1998), also known as a collective case study (Stake, 1995). The use of multiple cases strengthened generalizability of the research findings. Within a bounded system of selected online courses at one university, this descriptive multicase case study examined the responsibilities and activities of an embedded librarian providing support to students and faculty in online courses. As recommended by Creswell (2005), this research sought to develop an in depth understanding of the embedded librarian in online learning by collecting a variety of data from students, instructors, and a librarian participating in selected online courses. It was expected that the findings of this research would lead to a set of recommended practices for embedded librarians serving distance learners through online courses.

By examining the phenomenon of a librarian embedded in online courses, this research conformed to the explanation that case study research often addresses a phenomenon such as an event, situation, program, or activity (Hancock & Algozzine, 2006). In addition, this phenomenon was studied within the natural setting of the online courses, another characteristic of case study research. Merriam (1998) characterized case studies as particularistic, descriptive, and heuristic. The research, conducted with

each case or online class, focused on a particular situation, that is, the role of the embedded librarian within the class. In this manner each case was particularistic. Each case in this qualitative study yielded rich description of stakeholders' perceptions of the embedded librarian. Additionally, this case study research was heuristic because some existing knowledge was confirmed, new insights were gained, and findings will lead to development of practical applications.

Embedded Librarian in the Study

The embedded librarian in this study served as the distance learning and resource sharing librarian for the study institution. He was hired for this position in part because of his knowledge and experience in providing support to distance learners. His portfolio of responsibilities already included providing library support to distance learning students and faculty, teaching information literacy, managing the resource sharing functions of the institution's library (e.g. interlibrary loan), and serving as librarian liaison to English composition course instructors. Due to his professional experience and responsibilities within the library, he was offered the opportunity to serve as the embedded librarian in the online courses for this study. He was eager to participate in the study because of its clear connection with his job responsibilities and the potential to gain additional knowledge applicable to his professional practice.

The embedded librarian was experienced in the use of the Blackboard® course management system, and he was skilled in the use of instructional technology applications that can support online learners. The librarian established a positive, collaborative working relationship with each course instructor. The librarian communicated with three of the four instructors prior to the start of the course and with

the fourth instructor during the first week of the course, to understand course content and learning outcomes; reviewed the syllabus; learned about assignments and due dates; suggested information literacy objectives and library resources to incorporate into the course; explained existing tutorials, subject guides and course gateways available on library web site; negotiated instructor's expectations of librarian's interaction with students including response times to postings; and requested designation in the Blackboard® course site that facilitated communication with and online access to students.

During the course, the embedded librarian communicated with instructors via multiple communication modes; created an "Ask the Librarian" forum in Blackboard®; monitored discussions and "Ask the Librarian" forum at least once daily; and was available to students and instructors via Blackboard®, e-mail, IM, telephone, and other venues as determined by librarian. The embedded librarian posted links to tutorials, library electronic resources, subject guides, course guides, and other relevant instructional materials; and referred students and instructors to other librarians and resources as necessary. The librarian watched for and notified students and instructors of technical problems that might impede access to Blackboard® and online resources. Throughout the course the librarian kept a record of strategies, resources, techniques, and other activities noting what was effective or problematic.

Sample Selection

This research was conducted at a public, comprehensive university in the Mid-Atlantic region of the United States. In keeping with case study methodology, nonprobabilistic purposeful sampling, rather than random sampling, was employed. In other words, this research examined a small group of cases purposely selected based on

characteristics most likely to yield rich information for this study (Merriam, 1998). The sample cases were selected based on the following criteria: 1) at a minimum, 80% of the course was taught online; 2) the Blackboard[®] learning management system was the primary vehicle for delivering course content; 3) the course included a component that required students to do library research; 4) a librarian was embedded in the course; 5) the course was taught during the summer 2012; 6) the minimum class size was 7 students and the maximum class size was 25 students; and 7) the instructor was willing to have the class participate in the case study. While other attributes could have been added to the criteria, such as course level, discipline, and core curriculum requirement, Stake (2000) pointed out that case “selection by sampling of attributes should not be the highest priority. Balance and variety are important; opportunity to learn is of priority importance” (p. 447). Thus, the criteria were limited to seven.

The goal for this research was to study four cases. Eight online courses offered during summer 2012 were identified as potential cases for this research: undergraduate level Introduction to Criminal Justice; undergraduate level Physical Geography; undergraduate level World Regional Geography; undergraduate level Political Research I; combined undergraduate and graduate level Interest Groups and Public Policy; graduate level Research and Information Technology; graduate level Adult Learning Theories; and graduate level Advanced Theory and Philosophy of Occupation.

Each instructor was contacted to determine interest in participating in the study, and four instructors agreed. One instructor taught two different education courses, however only one of these was included in this study. One instructor taught a combined undergraduate level and graduate level course, which the university counted as a single

course, and it was included in the study. In this study, each course formed a singular, distinct case, and each case had its own complexities. Reflecting balance and variety, the final research study was comprised of four cases: one graduate level education course, one graduate level occupational science course, one undergraduate political science course, and one combined upper level undergraduate/graduate level political science course. This selection of courses provided the environment for examining particularity without diminishing the ability to identify typicality (Stake, 2000).

Within the cases studied, the interview sample included the following subjects: 1) the instructor of each course; 2) the embedded librarian; and 3) four students from each course. Each course had a different instructor. The same librarian was embedded in each course. The students interviewed were those who volunteered. An incentive of \$25.00 was offered to encourage students to volunteer for the interviews. Of the 20 students interviewed, four students requested that the incentive money be donated to the library. All students in each of the cases were sent an online survey about the role of the embedded librarian in their course.

Context of Study

Four fully online courses offered in summer 2012 served as the four cases for this multicase research study. All four courses were delivered via the institution's Blackboard[®] course management system. Each course served as a single case. The same embedded librarian supported each course in the study. He was the institution's distance learning resource sharing librarian and was experienced in supporting distance learners. He did not have prior experience in supporting any of the courses in this study.

Case One was a graduate course in the department of educational technology and literacy open to master's and doctoral students. The instructor was experienced in teaching distance learners and had taught this course 20 times previously in hybrid or fully online formats. Fifteen students were enrolled in this course. Of the students reporting their enrollment status, eight were pursuing master's degrees, one student was doing post-master's degree work, and one was taking the course for professional development. Blackboard® functions and folders used in this course were Discussion Board; Ask a Librarian Discussion Board; Announcements; File Exchange; E-mail; Blog; Assignments; Syllabus & Info; Research Links; Library Resources & Databases; and APA Guidelines.

Case Two was a graduate course in the department of occupational science designed for master's and doctoral students and offered in a five and a half week summer session. The instructor had taught this course eight times in the past, six times face-to-face and twice online. Sixteen students were enrolled in this course. Eight students reported their enrollment status: one student was an undergraduate, five were master's degree students, one was a doctoral student, and one reported "other." Blackboard® functions and folders used in this course were Discussion Board; Ask a Librarian Discussion Board; Course Documents; Assignments; Midterm Prep PPTs and Content; WebEx Recordings; and External Links.

Case Three was based on an upper level undergraduate course in the department of political science offered in a ten week summer session. The instructor had taught this course in face-to-face or online formats for over 25 years. Seventeen students were enrolled in this course. Nine indicated they were undergraduate students and one

indicated “other” without an explanation. Blackboard® functions and folders used in this online course included Discussion Board; Ask a Librarian Discussion Board; Announcements; Course Documents; and Lesson Modules.

Case Four was ten-week summer session course in the department of political science offered to upper level undergraduate and master’s level students. The instructor had taught this course in face-to-face and online formats several times. Thirteen students were enrolled in the course, and although the course was open to graduate students, all the students were undergraduates. Blackboard® functions and folders used in this course were Discussion Board; Ask a Librarian Discussion Board; E-mail; and Assignments.

Table 6 summarizes the general context of the cases in this study. More detailed descriptions of the course context, participants, interactions, and activities are found in Chapter Four where the findings for each case are presented.

Table 6

Context of Study

Case	Discipline	Level	Course Length	Instructor	Librarian	Students
1	Educational technology & literacy	Master’s	10 weeks	Taught course 20 times online & hybrid	New to this course	15
2	Occupational science	Master’s & Doctoral	5 ½ weeks	Taught course 2 times online	New to this course	16
3	Political science	Upper level undergraduate	10 weeks	Taught course face-to-face & online over 25 years	New to this course	17
4	Political science	Upper level undergraduate & master’s	10 weeks	Taught course face-to-face & online several times	New to this course	13

Data Collection

Yin (2003) advised that multiple sources of evidence be used in data collection for case studies. In this research, four data collection methods were utilized: interviews, surveys, observations, and data mined from documents. Data collection occurred throughout the course of the research.

Kvale (1996) wrote, “the purpose of the qualitative research interview has been depicted as the description and interpretation of themes in the subjects lived world” (p. 187). In this study, interviews captured the participants’ perspectives of their lived world, that is, within an online class supported by an embedded librarian (Kvale, 1996). The interviews were semistructured, a technique Hancock and Algozzine (2006) recommended as “particularly well suited for case study research” (p. 40). They explained that semistructured interviews employ predetermined yet flexibly worded questions combined with follow up questions “designed to probe more deeply issues of interest to interviewees” (p. 40).

Questions in the semistructured interviews were designed to elicit the interviewee’s perception of the role of the embedded librarian in the online course. While the questions used in the semistructured interviews were predetermined, the responses were open-ended, enabling interviewees to provide complete, descriptive answers. Some of the interview questions were derived from the literature. For example, the researcher asked the instructors, “What is your perception of the value of the embedded librarian to student success in this online course?” Figa, Bone, and MacPherson (2009) asked the professor in their study a similar question about her “overall viewpoint on the effectiveness of the Librarian in the Classroom component as

implemented” (p. 97). This researcher asked if instructors would recommend including an embedded librarian in online courses to faculty colleagues, almost identical to an item on Tumbleson and Burke’s (2010) survey of faculty.

The interview protocols were tested in a pilot study. Minor revisions were made in the wording of some questions to improve clarity. A few new questions were added to each protocol. For example, the instructors and the librarian were asked specifically about the ways in which information literacy was integrated into the online courses. Also new to the interview protocols, all three stakeholders were asked if they would recommend including an embedded librarian other online courses. The interview protocol used with the instructors is found in Appendix A. See Appendix B for the interview protocol used with the librarian and Appendix C for the interview protocol used with the students.

Semistructured interviews were conducted with the instructor of each course, with the embedded librarian, and with four students from each course. Rather than conducting redundant interviews for each course he served, the embedded librarian was interviewed once, however, as his experiences differed in each course, he designated the cases to which his responses pertained. The instructors and librarian interviews lasted approximately one hour each and were conducted face to face. Each student interview lasted about twenty minutes, and all were conducted over the telephone except one which was conducted face-to-face. All interviews were recorded and transcribed.

Transcriptions were read multiple times, and information was coded then grouped into categories and themes. Nvivo software was investigated as a tool to assist in organizing the interview data, however it was not used. Nvivo software was not used because the

researcher believed manual organization of the codes was a more effective strategy when compared to the time necessary to learn how to use Nvivo. In addition, the researcher thought that the manual approach facilitated and enhanced the iterative and constant comparative coding process.

An online survey was designed to gather information about the students' perceptions of and suggestions for an embedded librarian in online courses. Several of the survey questions reflected questions used by studies cited in the literature. For example, survey questions about methods and frequency of contacting the embedded librarian, and perceived helpfulness of the embedded librarian were based on Tumbleson and Burke's (2010) survey of students. The survey was tested in the pilot study, and a few modifications were made to ensure clarity of questions and richness of data. For example, students were asked if they had received instruction from a librarian in a prior course. Approximately 50% of the students in the study institution transfer in from other schools, so this question was divided into two questions to determine if prior library instruction was received at the study institution or at another institution. A slight change was made to a question about prior experience with hybrid courses to specify that hybrid courses are 80% - 99% online, as defined by the United States Distance Learning Association (2010). See Appendix D for the student survey questions.

Campus Labs software, formerly StudentVoice, was used to format the survey into an online document. This software provided flexibility in survey design and allowed for open-ended comment boxes. The software automatically generated frequency tables and graphs of responses for each question and listed respondent comments. For convenience of distribution and easy access by students, a link to the online survey was

provided in the Blackboard® course site. The initial return rate varied by course. In one course 11 out of 15 (73.3%) students returned the survey. The return rate was unacceptably low for the three other courses in the study. The expiration date for the survey was the day after the last class of the session, and it is possible that the survey closed before all the students had an opportunity to reply. To encourage more student participation, an e-mail message with a link to the re-opened survey was sent to each individual student in the courses with low response rates. This effort yielded a return rate of 11 out of 15 (73.3%) students in one course; 7 out of 16 (43.8%) students in one course; 10 out of 17 (58.8%) in one course; and 4 out of 13 students (30.8%) in another course.

As a non-participant observer, the researcher observed the interactions between the librarian and the instructors and students virtually via the Blackboard® course management system. The primary purpose of the observations was to confirm that interactions between the librarian and students in each class were occurring. Creswell (2005) refers to “observational protocol, in which the researcher records notes about the behavior of participants” (p. 48). In this study, the researcher observed the online behavior of the instructor, students, and librarian via Blackboard®. These observations provided insight to the questions students asked the librarian; assistance students requested from the librarian; and assistance provided by the librarian.

Data was mined from several types of documents including physical artifacts (Yin, 2003) in the form of course syllabi and postings on Blackboard®. In addition, the embedded librarian maintained several documents that provided rich data for this study. In his “Embedded Librarianship Journal,” the embedded librarian recorded his weekly

work commitments to the online courses in the study; his reflections on the processes; his interactions with instructors and students; and his recommendations for future implementations of the model. The data generated was primarily qualitative with some quantitative information related to the number of hours involved in preparation, reading discussion board postings, responding to questions, hosting virtual office hours, and working on technical issues. The librarian created and shared an “Embedded Librarian Proposed Support Schedule” for each online course in the study. He scheduled when he would introduce himself to the students, when he would post specific information related to the individual courses; when he would read discussion boards; and when virtual office hours would occur. Although the document title indicated “proposed” schedule, follow up conversation with the librarian revealed that the proposed schedules were followed except for slight modifications to a few dates. The third document that provided rich details for this study was the “Embedded Librarian Question Statistics.” For each online course, the embedded librarian kept track of the number of questions students asked; the technology they used to ask the questions; the number of students using the embedded librarian’s service; the kinds of questions asked; the time of day in which questions were asked; the number of questions referred to the subject specialist librarian; and the number of referrals to the instructor.

Table 7 outlines the data collection methods employed for each research question. Interviews, observations, and data mining were used to address research question one, “What is the instructor’s perception of how the embedded librarian works in the online class?” Interviews, surveys, observations, and data mining were used to address research question two, “What is the student’s perception of how the embedded librarian works in

the online class?” Interviews, observations, and data mining were used to address research question three, “What is the librarian’s perception of how the embedded librarian works in the online class?”

Table 7

Data Collection Methods for Research Questions

Research Question	Interview	Survey	Observation	Data Mining
#1-Instructor’s perception?	√		√	√
#2-Student’s perception?	√	√	√	√
#3-Librarian’s perception?	√		√	√

Note. Research questions are:

#1 -What is the instructor’s perception of how the embedded librarian works in the online class? #2 -What is the student’s perception of how the embedded librarian works in the online class? #3 -What is the librarian’s perception of how the embedded librarian works in the online class?

Table 8 presents the timeline for data collection. While data was collected throughout the time in which the online classes were studied, it was important to collect certain data elements at particular times. For example, the student interviews and surveys were scheduled toward the end of the class sessions so that the students would be able to provide more informed responses. Instructor and librarian interviews occurred toward the end of the courses to ensure the comments encompassed their entire experience with the embedded librarian.

Table 8

Data Collection Timeline

Type of Data Collection	Format of Data	Timeframe of Data Collection
Data mining	Course syllabus for each class studied	Week 1 of class
Data mining	Other course documents provided by instructor or librarian of each class studied	Throughout class
Observation	Interactions in Blackboard® between students, instructor, and librarian in each class studied	Throughout class
Interview	Interviews with selected students from each class studied	Last two weeks of class & later if necessary
Interview	Interviews with instructor of each class studied	Last two weeks of class & later if necessary
Survey	Online survey of students in each class studied	Last two weeks of class & later if necessary
Interview	Interview with librarian for each class studied	One week after completion of class

Research Procedures

The university's Institutional Review Board granted approval to conduct the research (Appendix E). Prior to collecting data, the researcher spoke with the instructor of each course selected for the study to explain the topic and purpose of the research, the concept and activities of the embedded librarian, the procedures for data collection, and the timeframe for the study. The researcher met face to face with the instructors for three of the courses and met via telephone with the instructor for one course. The researcher did not interact with the instructors again until they were interviewed.

The designated embedded librarian for the study met face to face with three of the instructors prior to the first week of the courses. Due to late scheduling, the librarian met

with one of the instructors via telephone during the first week of that course. In each instance, the librarian introduced himself and explained his role in supporting each online course. He reviewed the syllabi for the courses, described the library resources and services he would provide or create, outlined his intended use of Blackboard[®], and answered questions. The librarian created an open line of communication with each instructor enabling ongoing dialog throughout the courses. The librarian generated several documents throughout the courses that provided rich qualitative data for this study. For each course, he created a support schedule, logged questions asked and answered, tracked the time devoted to each course, and recorded his reflections about the embedded librarian process. Important data was mined from his documents. Table 9 summarizes the data collected for each course.

Table 9

Summary of Data Collected for Each Case

Course	Level	Students Enrolled	Student Survey Responses	Student Interviews	Instructor & Librarian Interview Librarian Generated Documents
Case 1	Master's	15	11	4	Yes
Case 2	Master's & Doctoral	16	7	4	Yes
Case 3	Under-graduate	17	10	4	Yes
Case 4	Under-graduate/ Master's	13	4	4	Yes

Data Analysis

Data collection and analysis occur simultaneously in qualitative research (Maxwell, 2005; Merriam, 2009). In this study, data analysis occurred during and

following data collection, was recursive, and was comparative. Data was continuously interpreted (Stake, 2000) and constantly compared.

The data collected for this study was organized and managed through coding, which Merriam (2005) explained as simply “assigning some sort of shorthand designation to various aspects of your data” to facilitate retrieval of specific pieces of data (p. 173). Coffey and Atkinson (1996) described coding as “a range of approaches that aid the organization, retrieval, and interpretation of data” (p. 27). In the first phase, the interviews and documents were cataloged and organized in a manner that made them easily retrievable. Some of the codes used emerged from the literature prior to data collection beginning (a priori codes). Other codes were not predefined but were derived from the collected data using an open coding process (Creswell, 2005; Saldaña, 2009). In some cases coding emanated directly from the language of the participants, thus defined as in vivo codes (Creswell, 2005; Saldaña, 2009). Like Coffey and Atkinson (1996), Saldaña (2009) described coding as a “heuristic (from the Greek, meaning ‘to discover’) – an exploratory problem-solving technique without specific formulas to follow” (p. 8). According to Saldaña (2009), coding is the initial step toward “rigorous and evocative analysis and interpretation” (p. 8). More than labeling, coding is a way to link data with ideas, and ideas with data (Saldaña, 2009). Coffey and Atkinson (1996) agreed, explaining that coding is used as a way to generate concepts, and that “important analytic work lies in the identification of relevant concepts” and in establishing linkages (p. 27). The raw data was coded, the codes were organized, and categories of meaning were constructed from the organized codes (Merriam, 1998; Saldaña, 2009). When appropriate, subcategories were created within categories (Saldaña, 2009).

Content analysis was employed to identify themes and recurring patterns of meaning across the data collected. Saldaña (2009) posited that “a theme is an outcome of coding, categorization, and analytic reflection, not something that is, in itself coded” (p. 13). Similarly, Maxwell (2005) wrote that coding the data and arranging the data into categories aids in the development of theoretical concepts. Following the models of Saldaña and Maxwell, the data in this study was coded, the codes were grouped into categories and subcategories, and the categories led to themes.

Data collected from interviews and documents were compared with each other, within each case, and across all the cases. As Merriam (1998) explained, “these comparisons lead to tentative categories that are the compared to each other and to other instances” (p. 159). Creswell (2005) described the constant comparative method used in data analysis for this study as

an inductive (from specific to broad) data analysis procedure in grounded theory research of generating and connecting categories by comparing incidents in the data to other incidents, incidents to categories, and categories to other categories.

The overall intent is to ‘ground’ the categories in the data. (p. 406)

Although this study was not based in grounded theory, the constant comparative method was employed and worked effectively.

Validity, Reliability, and Ethics

Merriam (1998, 2009), Stake (2000), and Yin (2003) described several strategies for ensuring validity and reliability of qualitative research. This study of the embedded librarian in distance learning utilized triangulation and member checks to ensure internal validity. Multiple sources of data in the form of interviews, surveys, and documents were

used to triangulate and confirm the findings. Themes in student interviews were compared to findings from student survey responses. To accomplish member checking, the researcher followed up with the librarian and instructors as necessary to clarify interview transcriptions. In addition to triangulation and member checking, the researcher examined and clarified her assumptions at the outset of the study.

Merriam (1998) explained that achieving reliability is impossible in case studies. Instead, dependability and consistency are sought. To achieve dependability and consistency, the researcher explained her relationship with the informants; used multiple methods of data collection and analysis; and maintained a journal documenting the research process. The journal served as an audit trail. Yin (2003) likened this audit trail to a “chain of evidence” (p. 105).

External validity or generalizability was demonstrated through the concrete universals revealed by the research findings (Merriam, 1998). In other words, the research findings about the role of the embedded librarian in distance learning were in the form of concrete generalizations that could be applied to other cases in which a librarian is embedded into an online course. In addition, user generalizability in which the reader applies the research findings to his or her own case will be possible. Stake (2000) explained this process as reporting “cases in sufficient descriptive narrative so that readers can vicariously experience these happenings and draw conclusions (which may differ from those of the researchers)” (p. 439).

Ethical considerations for this study reflected the mandates of the Towson University Institutional Review Board, and the Institutional Review Board approved the study (see Appendix E). Furthermore, as Merriam (1998) recommended, the researcher

was “conscious of the ethical issues that pervade the research process” including confidentiality, respect, and morality (p. 219).

Role of the Researcher

The researcher worked as a librarian since 1976 in a variety of library environments including elementary school, middle school, community college, private university, and public university. An early proponent of teaching users how to identify, locate, gather, analyze, synthesize, and critique information, now defined as information literacy by the Association of College and Research Libraries (2006), the researcher maintained a strong commitment to supporting and assisting students and faculty in their research, scholarly, and academic endeavors. With the rapid expansion of online education throughout higher education, it became clear to the researcher that library support to distance learners must be strengthened. Investigating how academic libraries can ensure high quality, equitable services to distance learners became a research priority. It is important to note the researcher’s institutional role related to the study. The researcher was employed as an administrator by the university whose online courses form the cases for this study. The researcher was acquainted professionally with each instructor participating in the study and had been a student of one of the instructors. The embedded librarian in this study was the Distance Learning Resource Sharing Librarian in the library for which the researcher was the administrator, however the librarian did not report directly to the researcher. The researcher was a non-participant in the study and maintained a detached relationship with the participants and the data. The researcher did not expect her administrative role in the institution’s library to affect the participants’ perspectives in the research process.

Limitations of the Study

This qualitative study provided in depth information about the role of the embedded librarian in each case in the research. The study was subject to a few limitations, however. The study examined cases at a single institution. There were no lower level undergraduate online courses available to include in the study during the time period of data collection. The courses studied were summer school classes, running fewer weeks than classes during a regular semester. The abbreviated time period may have affected the frequency of interactions between the students and librarian.

CHAPTER IV: FINDINGS

The purpose of this research was to understand the role of the embedded librarian in online courses. The researcher gathered data from instructors, students, and a librarian in four online courses to answer three research questions: 1) What is the instructor's perception of how the embedded librarian works in an online class? 2) What is the student's perception of how the embedded librarian works in an online class? 3) What is the librarian's perception of how the embedded librarian works in an online class? This chapter presents the findings from the qualitative study of instructors, students, and an embedded librarian in four online courses. Each course formed a case in this multicase study.

In presenting the findings from each case, the content of each course is described, followed by the instructor, student, and librarian perceptions of the work of the embedded librarian in the course. Primary themes emerging from the data for the instructors, students, and librarian were the value of the work of the embedded librarian, the challenges to the work of the embedded librarian, and the future enhancements for the work of the embedded librarian. In addition to a description of the findings for each case, the findings across the four cases are presented.

To ensure anonymity, participants are represented by abbreviations that indicate their status and by numbers that indicate their case. For example, In=Instructor; S=Student; L=Librarian. In1=Instructor in Case One. S1-1= Case One Student One; S1-2=Case One, Student Two; L1=Librarian in Case One; In2=Instructor in Case Two, and so forth.

Case One

Case one - course context. Case One was situated in a nine-week summer session online graduate course in the college of education at the study institution. The course was designed as an introduction to reading, interpreting, and utilizing published empirical research. By the end of the course, students were expected to demonstrate

an understanding of the research process, including writing, Internet research, and citing sources; an understanding of research concepts involved in research reports; the ability to evaluate the quality of this information; the ability to critically analyze research reports and to relate them to an educational problem; the ability to identify a researchable topic of significance; the ability to collect, analyze, and synthesize research related to selected topics; and the ability to prepare written reports and present findings, conclusions, and recommendations based on the analysis and synthesis of research on a selected topic. (Course Syllabus, p.1)

This fully online course used the Blackboard[®] course management system and WebEx communication software (Course Syllabus, p.1).

Instructor and librarian. The instructor (In1) for this course had a doctoral degree and had taught this course more than 20 times previously in hybrid and fully online formats. The embedded librarian (L1) assigned to support this course was the distance learning and resource sharing librarian for the institution. He had not provided any type of library support to this course in the past. Although the librarian had background experience supporting other education courses, he did not have a formal degree in the discipline.

Students. Fifteen students were enrolled in this course. The researcher conducted individual interviews with four (26.7%) of the fifteen students. Eleven (73.3%) of the fifteen students responded to the researcher's survey. As the survey responses were anonymous, it was not known if the interviewed students responded to the survey.

Eight of the survey respondents were pursuing master's degrees, one respondent was a post-master's degree student, one was taking the course for professional development, and one of the survey respondents did not indicate their standing. Of the eleven survey respondents, seven (64%) had taken a fully online class in the past five years. This was the first fully online course for three (27%) of the eleven survey respondents. Five (45%) responding students had taken a hybrid course in the past five years, and five (45%) survey respondents had never taken a hybrid course. Four (36%) of the eleven survey respondents had received instruction from a librarian on how to do library research in a prior course. Six (55%) of the eleven students responding to the survey had never received library instruction.

Communication. The instructor and embedded librarian communicated frequently throughout the online course. Their initial planning conversation during a face-to-face meeting established mutual goals and expectations for the course and set the stage for continual instructor-librarian interactions (In1). The instructor used weekly and sometimes daily e-mails to clarify upcoming assignments and identify potential areas for the librarian to provide assistance to the students (In1). At the beginning of the course the librarian shared with the instructor drafts of messages he would send to students, and he requested the instructor's feedback before posting the messages on Blackboard® (In1).

Students S1-1 and S1-4 as well as survey respondents reported that the embedded librarian communicated with the students via e-mail, discussion board, chat, instant messaging, telephone, and in person. The embedded librarian participated in discussions on the course blog, utilized individual and group chats, and met with the students in synchronous online sessions (In1). The librarian created and monitored an “Ask the Librarian” discussion board within the course Blackboard® site and responded to questions from the students within 24 hours (In1).

Assistance from the librarian. The embedded librarian analyzed the course syllabus, created a support schedule, and shared it with the instructor via e-mail. The schedule outlined when the librarian would provide pre-determined support during the term such as launching the “Ask A Librarian” discussion board, holding virtual office hours, and posting instructional materials.

The librarian established an “Ask the Librarian” discussion board on the class’s Blackboard® site. He posted instructional materials and responded to questions related to library research, citation styles, resources evaluation, and plagiarism. He held virtual office hours for this class in the evening and on weekends for a total of eleven hours.

The embedded librarian responded to twelve direct questions (eight via e-mail and four via discussion board) from six students. Three questions were asked in the morning, six questions were asked in the afternoon, and three questions were asked in the evening. One question was referred to the subject specialist librarian and two questions resulted in referrals to the instructor. Three questions focused on citations, three on searching for resources, three on accessing resources and using interlibrary loan, one on evaluating sources, and two on course assignments.

The embedded librarian reported that he provided a greater range of services in this class than in some other courses, and he gave a lot more feedback to the students. (In1). He provided feedback on search strategies, source qualities, and citation styles. Course assignments required the students to search for information in library resources (In1). The instructor posted the students assignments within Blackboard® where they were available for the embedded librarian to see (L1). He was able to “monitor all of their assignments as I went, and then I could anticipate their concerns” (L1). The instructor alerted the embedded librarian to challenging areas where students might be confused (In1). “I would review student’s discussion boards and their search strategy journals and their annotated bibliographies, and I would give global feedback to the course Blackboard®” (L1).

One of the interviewed students (S1-2) reported that the embedded librarian was visibly present in their online course. He provided both general and specific assistance to the students. He “would pop in, put in notes, and give ideas” (S1-2). Survey respondents indicated they sought assistance from the embedded librarian in using and searching in online databases; constructing search strategies; ordering materials from other libraries; defining a research topic; using the library’s online catalog; selecting journals to use; remotely accessing online databases; and using proper style for citing sources.

According to the survey respondents, the librarian provided the following assistance and information through the Blackboard® course site: general information about library resources and services; links to tutorials about using the library and doing research; responses to questions other students posted on the course Blackboard® site; link to the library website; links to course gateways designed to help find information

about a specific course; links to help guides designed to help students use databases, citation style guides, or other library resources; links to the librarian's website; and links to subject guides to help find information about particular subjects. See Table 10 for types and frequency of assistance from the librarian, as reported by students who responded to survey.

Table 10

*Embedded Librarian's Assistance to Students in Case One – Survey Responses**(N = 11)*

Assistance Sought by Students		Assistance Provided by librarian via Blackboard®	
Type	Frequency	Type	Frequency
Using & searching in online databases	2	General information about library resources & services	6
Constructing a search strategy	2	Links to tutorials about using library & doing research	5
Ordering materials through interlibrary loan	2	Responses to questions posted by other students on Blackboard®	5
Defining a research topic	1	Link to library website	3
Using library's online catalog	1	Links to course gateways for finding information about a specific course	3
Selecting journals to use	1	Links to help guides for using databases, citation styles, or other library resources	2

Remote access to online databases	1	Link to librarian's website	2
Using proper citation style	1	Links to subject guides for finding information about particular subjects	1

The instructor introduced concepts of academic integrity, ethical issues involved in research, and use of the American Psychological Association (APA) Style Guide (In1). The instructor in case one reported that students' concerns about citation rules were addressed by the embedded librarian who pointed to multiple web-based resources about APA style and provided at least one online session targeting APA format (In1).

Library resources used by students. The case one students interviewed listed a variety of library resources they used in the online course; some were instructional materials on how to do library research, and some were information sources. The students reported using Education Research Complete database, EBSCO Host, and Academic Search Premiere. Survey respondents indicated they used tutorials about doing library research, subject guides, help guides, course gateways, the librarian's website, the library website, and online databases. Student S1-1 reported watching videos available through the library website on how to navigate the library website, look up articles, use EBSCO search, and order books from other campuses in the university system. Student S1-4 did not use any tutorials and instead "played around" on the library website using trial and error, and referred to notes and an APA guide from a prior course. The library instructional resources used by the students were not unique to the work of the embedded librarian. They already existed and were available through the library's website, however

in some cases the embedded librarian helped the students locate these instructional resources.

In addition to assisting the students, the librarian provided the instructor with updated links to reference resources for the instructor's online course materials (In1). The embedded librarian also provided an analysis of the students' questions for the instructor to use in planning future sections of the course (In1).

Case one - instructor perceptions. Research question one in this study asked, "What is the instructor's perception of how the embedded librarian works in an online class?" Instructor data was generated through an interview. Three themes emerged from the data analysis: value of the embedded librarian; challenges to the work of the embedded librarian; and future enhancements for the work of the embedded librarian. See Appendix E for coding scheme of the data. Described below are the instructor's perceptions of the value of the embedded librarian; challenges to the work of the embedded librarian; and future enhancements to the work of embedded librarian.

Value of the embedded librarian. When asked about her overall perception of the value of the embedded librarian, the instructor replied positively, saying "on a 10-point scale it would be 10" (In1). Data emerging from the interview with the instructor in case one characterized the embedded librarian's value in terms of his communication, competence, availability, assistance provided to students, and assistance provided to instructor. The quality and means of the librarian's *communication* contributed to its value. According to the instructor, the embedded librarian's communication was clear and broad. He paid attention to details such as using clear subject lines for messages, and he posted communications in several places including the Blackboard® announcements

page, over e-mail, and in discussion boards (In1). The instructor explained, “The content of those messages and feedback he provided to the student[s] was exceptional, I think, very professional” (In1). The librarian shared communication tips with the students, explaining the differences between individual and group chats, particularly what types of questions to ask and through which communication mode (In1). According to the instructor, the “Ask A Librarian” space in Blackboard® was helpful, and the students appreciated the text record that Blackboard® maintained (In1). In addition, explained the instructor, “[the embedded librarian] has a wonderful tone and affect of communicating to the students,” always friendly and inviting, reducing the distance of the online format (In1).

The embedded librarian’s *availability* to the students was valued, and the instructor reported that “If there were any questions, [he] was there to answer them. ... My expectations ... were absolutely fulfilled. In my perception, he contributed much time [to the students]” (In1).

The instructor remarked that the embedded librarian was a highly valued member of the course, due in part to his *competence* and his attention to the students. “He contributed much of his expertise for addressing some of the challenges students had very efficiently” (In1).

The instructor explained that the embedded librarian’s value was also demonstrated by the *assistance he provided students*. According to instructor In1, many students lacked library research skills. The embedded librarian helped students with their search strategies and resource evaluation skills by participating in the course blog. He provided individual students with specific suggestions for narrowing topics and

evaluating sources. In addition, the librarian summarized the most common problems students encountered and gave the related solutions. He suggested “efficient strategies to locate their clinical research, to locate the full text, to retrieve the full text, and to make sure this is the type of sources that we’re seeking. And that was very, very helpful, right there” (In1). According to the instructor, the librarian helped the students determine key search terms and narrow their searches, “and there the librarian was very deliberate and was very helpful” (In1).

The embedded librarian *provided assistance to the instructor* as well. The librarian noticed outdated references and links on the instructor’s resource list, and he updated them. He was “particularly helpful” (In1).

Challenges to the work of the embedded librarian. Student characteristics and technology functionality emerged from the interview data as challenges to the work of the embedded librarian. A significant *student characteristic* in this course was the students’ lack of library research skills. The instructor observed that this course was their first introduction to published research (In1).

According to the instructor, *technology functionality*, in particular the Blackboard® course management system, created challenges (In1). The instructor indicated a desire for a more efficient course management system with interactive capabilities that could assist the embedded librarian’s activities “more efficiently than what we have today” (In1).

Future enhancements to the work of the embedded librarian. The following factors emerged from the instructor interview data as potential enhancements for the work of the embedded librarian: supporting resources, instruction and assignments,

assistance provided to instructor, technology functionality, and types of courses for the embedded librarian to support.

The instructor expressed a desire to have the embedded librarian create *supporting resource* guides customized for the course being taught (In1). Upon observing that the students used the librarian's services more often at the beginning of the course, the instructor suggested devoting the first week or so to a couple of *instructional sessions and assignments* hosted by the librarian (In1). After those lessons, the librarian could be available via online chat, e-mail, and discussion forum (In1). Having gained a better understanding of the embedded librarian's role, the instructor indicated that, in the future, she would redesign some class assignments to be hosted completely by the librarian, such as segments on research strategies, source evaluation, and APA citation rules, that is, skills associated with using the library resources (In1).

The instructor in case one recommended that the librarian provide assistance to instructors in updating the resources listed on course websites (In1). The instructor proposed that improvements in *technology functionality*, in particular the course management system, mobile technologies, Web 2.0 tools, and interactive technologies, would benefit the work of the embedded librarian in future online courses (In1).

The data emerging from the instructor interview suggested several *types of courses* for an embedded librarian to support, especially research methods and theory courses (In1). In addition, the instructor supported the inclusion of an embedded librarian in online courses throughout undergraduate, master's, and doctoral levels (In1).

Case one - student perceptions. Research question two asked, "What is the student's perception of how the embedded librarian works in an online class?" Student

data was generated through interviews and online surveys. Three themes emerged from the data analysis: value of the embedded librarian, challenges to the work of the embedded librarian, and future enhancements for the work of the embedded librarian. See Appendix F for the coding scheme of student data. The students' perceptions are described below in terms of value of the embedded librarian; challenges to the work of the embedded librarian; and future enhancements to the work of the embedded librarian.

Value of embedded librarian. Student interviews and survey responses yielded data that categorized elements contributing to the value of the embedded librarian as communication, librarian availability, assistance provided to students, student learning, and student characteristics.

Communication. Three of the four interviewed students defined means, content, and style of communication as valuable. The librarian responded quickly and was very engaged in e-mail communications, reported one student (S1-2). Another student said, "I thought it was nice that the librarian was interacting. No, I may not have been interacting back, but we did receive weekly if not every other day e-mails from him, and updates, and the offer to help, and I think it was great that he offered virtual office hours" (S1-4). The embedded librarian was very friendly, welcoming, and supportive (S1-3).

Librarian availability. Two of the interviewed students commented on the embedded librarian's availability. "Knowing he was there," and his presence in lieu of the instructor were perceived of value to the students (S1-1, S1-3). "This was my first class at [the university] and my first online class, so it was nice to have the name of a person I could contact with a question. It made the class feel less anonymous and more supported" (S1-3). The librarian was available late at night (S1-3). "If we needed help,

he was there” (S1-3). Another student commented, “I was able to ask him a question and felt like I had all the support I needed” (S1-1).

The librarian’s presence alone was deemed valuable, even if a student didn’t require his assistance. “I think the most help for me was just knowing that he was there. . . . It was helpful to know that if I needed him, I knew exactly who to go to, his name, and how to contact him,” reported one student (S1-1). Similarly, another student remarked, even though “I didn’t need his support . . . I do think it’s a valuable resource for those who need it” (S1-2). “There’s no doubt that if I would have needed him more, he would have been there and been available to me” (S1-2). Another student agreed, “I think if I would have needed it [the embedded librarian], it would have been very helpful” (S1-3). The librarian was also considered valuable during the times the primary instructor was not available (S1-2, S1-3).

Student characteristics. This graduate course focused on conducting library research in the field of education, requiring the students to search for journal articles on a particular topic, evaluate the sources, select empirical studies, and distinguish between quantitative and qualitative studies. According to the interview data, students’ perceived value of the embedded librarian was influenced by a particular student characteristic, that is students’ prior library research experience. All four interviewed students agreed that, if they had not possessed sufficient library research experience, they would have sought the assistance of the embedded librarian.

According to student S1-3, prior experience and knowledge of how the library and databases worked in general affected student needs for assistance from the embedded librarian and for information literacy instruction. Student S1-4 suggested that the

embedded librarian would be “extremely valuable for people who might not be experienced with doing research. ...And if there are a lot of people that don’t have as much technology experience, I think it’s great.”

Student S1-1 explained, “I had the majority of them [library skills] before I entered this course. ... In terms of using the library and looking up journal articles, and you know, analyzing them, I was pretty familiar with that.” Student S1-2 already had the ability to search for articles in peer-reviewed journals, to locate, read, dissect, and understand them. Student S1-3 explained this was the last course in his second master’s degree, “so I’ve been through a lot of the learning of the research skills. If this is my first master’s course, and I’d only done undergraduate work, or I didn’t look at peer reviewed journals and things, I could see being lost.” Student S1-4 described herself as very prepared for the library research requirements of the course in part because she had previously taken an on-campus course in which a librarian taught research skills. She admitted, “I’m pretty independent with my computer skills. I’m somebody that also just likes to play around with it until I figure it out. ... It’s getting on the library website and playing around.”

Survey results were similar to the interviewed students’ remarks. Survey respondents indicated that students possessing library research skills prior to this course needed less assistance from the embedded librarian than students without library research skills. They cited reasons such as, “I already have done a lot of research and did not need help finding anything;” “previous experiences in my undergrad prepared me to do research;” and “I already have a lot of background knowledge about library research from my undergraduate and masters degrees.” One survey respondent wrote that having a

librarian assigned to the class was “useful and helpful, but I could have been successful without one assigned. I do think those with less exposure to online learning and research could benefit substantially.”

Assistance provided to students. Interviewed students S1-3 and S1-4 stated that the librarian provided valuable research assistance, gave some good ideas, posted links to information and research instructions, and sent group e-mails with helpful tips and reminders. The embedded librarian posted an online video tutorial about using Boolean search strategies, and one student described it as a “tremendous benefit,” the most important research skill he learned (S1-2). This student also described the library’s course gateway that organizes online research resources by specific courses as really simple and much appreciated (S1-2).

Interviewed student S1-1 explained attempts to request material from another library through interlibrary loan. This student remarked, “I might not have been able to find [the interlibrary loan procedure and forms] that easily on your website if [the embedded librarian] hadn’t given me the specific link” (S1-1). This comment raises the possibility that without the assistance provided by embedded librarian, the students may have overlooked tutorials, course gateways, and citation tips that were generally available through the library’s general website.

Student S1-4 commented that the tips the librarian posted about American Psychological Association citation rules were helpful, even though “I absolutely did not interact with [the embedded librarian] at all.” Only one (25%) of the four students interviewed reported interacting personally with the embedded librarian, however all four

interviewed students indicated they benefitted from the librarian's discussion board postings and group e-mails.

According to the survey results, six (54%) of the eleven survey respondents sought assistance from the librarian one or more times. Four survey respondents (36%) reported never seeking assistance from the embedded librarian. One student commented in the survey, "[The embedded librarian] posted information on how to conduct research, and it was nice just knowing that we had him as a reference if needed." Another survey respondent wrote, "I asked a question to the librarian on the Blackboard® discussion board and had it answered the next day. [The librarian] helped show me how to use Towson's Interlibrary Loan." According to another survey respondent, "I found that [the embedded librarian] was a big help in completing the assignments. I think it made it easier to communicate."

Table 10 lists the types and frequency of assistance from the librarian, as reported by students who responded to the survey. This extensive list illustrates that the students received an array of assistance from the embedded librarian, even if they did not intentionally seek it.

Student learning. The survey asked students if they thought the embedded librarian contributed to their success in the course. Five (45%) of the eleven students responding to the survey replied, "Yes," and three (27.2%) of the eleven students responded "No." Students responding "No" and "Not sure" did not supply comments, so it is impossible to know the reasons for their responses.

The survey also asked students if the librarian's participation in the Blackboard® course site was valuable. Seven (64%) of the eleven survey respondents indicated the

librarian's participation in the Blackboard® course site was valuable, and one student (9%) responded "No." Again, the students responding "No" and "Not sure" did not supply comments. Table 11 illustrates student responses to these two survey questions.

Table 11

Value of the Embedded Librarian to Students in Case One – Survey Responses

(*N* = 11)

Librarian contributed to student success in course		Librarian participation in Blackboard® course site valuable	
Yes	5	Yes	7
No	3	No	1
Not Sure	1	Not Sure	1
Other	2	Other	2

Confirming the interview findings, several students noted in the survey that the assistance the librarian provided contributed to their success. Survey respondents offered the following comments: "It was nice to have [the embedded librarian] help answer questions that were more specific to library issues." "The [embedded librarian] was very helpful and always followed up on our questions with detailed answers." "Received a lot of help in relation to finding sources." "The required labs in the beginning of the course helped me to understand the navigation of the library."

Indicating that the librarian's participation in the Blackboard® course site was valuable, one survey respondent remarked: "Although I did not have any questions for the librarian, I know many people did. He was very willing to help and posted on the Blackboard® page often. Although I did not use this support tool in this class, I may in another." "Finding research takes a considerable amount of time. The amount of time spent on learning how to navigate the library, in the end, saved time sifting through endless research reports."

Challenges to the work of the embedded librarian. Data emerging for the research suggested that student perceptions of the challenges to the work of the embedded librarian related to *student characteristics*. As described earlier, prior library research experience affects student use of the embedded librarian. Similarly, as student S1-4 suggested, the embedded librarian would be challenged by students “who might not be experienced with doing research, especially ... the older generation that may not have as much experience with technology that’s now available.”

A more significant challenge revealed by the data was the perception that the work of the embedded librarian was of *minimal value*. As indicated in Table 11, three (27%) of the survey respondents reported that the librarian did not contribute to their success in the course. The survey respondents commented: “I did not use the librarian, but he was always willing to help.” “I did not use the library’s help, so he could not contribute to my success in the course.” “I did not use them at all.” One survey respondent indicated the embedded librarian was not valuable. He commented, “I did not use the librarian, and he only posted how to reach him and when he was available to help, but I did not need the assistance so it was not of value to me.” Another survey respondent was not sure if the embedded librarian contributed to his success in the course and commented, “Useful and helpful, but I could have been successful without one assigned.

One student responding to the survey was not sure if the librarian’s presence in Blackboard[®] was valuable. Two survey respondents remarked, “Other” to the survey question, and one of these students commented, “I did not notice a specific benefit, but his presence was quite clear, and I have no doubt others benefited.” Interviewed student

S1-4 reported, “For me, personally, there was no value in it. I wouldn’t have done anything differently if [the librarian] would not have been part of this course.”

Future enhancements to the work of the embedded librarian. Student data emerging from this course pointed to one factor related to future enhancements for the embedded librarian: types of courses to support.

Three of the interviewed students made suggestions about the *types of courses to support* in the future. Student S1-2 remarked that, if resources are limited, undergraduate courses should be a higher priority than graduate courses for receiving the services of an embedded librarian. Student S1-3 claimed that the embedded librarian would be more important in a higher level, content specific course instead of this “general instructional technology” course. Student S1-1 proposed that the embedded librarian would be especially helpful in research-based courses and in online courses. Having a designated librarian in an online course, where contact with people on campus is limited “makes it a little bit easier to ask a question. It doesn’t feel quite as anonymous.”

Case one - librarian perceptions. Research question three asked, “What is the librarian’s perception of how the embedded librarian works in an online class?” Librarian data was generated through two interviews (LG-1 and LG-2), Blackboard® postings (Bb), and the librarian’s documents: “Embedded Librarian Proposed Support Schedule (ESS),” “Embedded Librarianship Journal (LJ),” and “Embedded Librarian Questions Statistics (LQS).” Data gathered from the librarian spawned three themes: value of the embedded librarian; challenges to the work of the embedded librarian; and future enhancements to the work of the embedded librarian. The data generated by the embedded librarian across the four cases was coded collectively. Appendix M illustrates

the coding scheme for the embedded librarian data across the four cases. Data related specifically to Case One is described here.

Value of the embedded librarian. Data collected from the embedded librarian specifically related to case one revealed several factors that contributed to his perception of value to the course: communication, planning, librarian availability, student learning, and types of courses to support. The librarian (L1) remarked that *communication* with students via his real time introduction to the students using WebEx might have contributed to the students' willingness to use him. He explained, "Attendance in the WebEx orientation was very positive" and helped to establish a "relationship between students, librarian, and primary instructor in an integrated way from the very beginning." Also related to communication, the embedded librarian acknowledged the importance of the instructor referring students who needed more assistance to him.

In the area of *planning*, the embedded librarian said he "probably collaborated the most with the instructor in this course" (L1). He indicated they had a "fine tuned collaboration, and I think that had to do with the fact that I had a chance to plan a little bit more with [the instructor]." Additionally, the *librarian's availability* during the second to last week of the session was critical and valuable. The librarian explained in his journal (LJ1) that assignments were coming due, the instructor was away, and the "number of student questions increased."

The embedded librarian stated that the students' search strategy blogs were excellent vehicles for observing *student learning*. In having access to the students' blogs, he "was able to actually note when and what the students learned about refining their searches. The global response to the class also allowed me to point out strengths and

weaknesses and tips once, rather than multiple times” (LJ1). Finally, librarian data revealed that this *type of course*, i.e., a course with a formal research component, proved to be an ideal setting for the work of the embedded librarian (L1).

Challenges to the work of the embedded librarian. Elements contributing to the embedded librarian’s perceived challenges to his work emerged from the data as communication, supporting resources, and technology functionality. *Communication* between the instructor and librarian created unforeseen difficulties at times. In one instance, the instructor and embedded librarian had not clarified who was responsible for giving feedback to the students and when. “There was a kind of scramble at one point to get that feedback to the students in time so they’d be prepared to improve on their previous work for their next assignment. We hadn’t thought about breaking our roles down to such a fine tuned level,” the librarian said (L1). In another situation, according to the librarian (L1), the instructor needed to clearly communicate to the students that she was referring them to the librarian for assistance and that the librarian would contact them.

Some of the supporting resources posted by the instructor were out of date or incorrect. The embedded librarian pointed out these inaccuracies to the instructor. Not anticipating this situation, the librarian was faced with the challenge of correcting and updating the instructor’s resource links. The embedded librarian “updated the links that students were explicitly asked to follow in required modules for the course” (L1). “There were several long documents that had links – some possible library related and some not – which I didn’t have time to check. For these I simply informed [the instructor] that

some links were out of date so that she would know to check them for future classes” (L1).

Problems with *technology functionality*, particularly the Blackboard® chat tool, added to the challenges in this course. “There are some glitches with Blackboard® chat. In most sessions I was booted out about once every ten minutes. I quickly logged back in – less than a minute, but that is still not an optimal situation” (LJ1). Its “propensity for constant mutual interruption and proliferating questions” led the librarian to offer telephone and face-to-face support instead (LJ1). Similar technology problems surfaced during the librarian’s virtual office hours. The librarian reported that one student “had to download Java for Firefox in order to access the chat, but he wasn’t able to finish that before the [virtual office] hours were over. So instead [the student] simply e-mailed me the questions and I answered them in that medium during the designated hours” (LJ1).

An additional challenge related to *technology functionality* was determining why some students did not make use of the virtual office hours. The embedded librarian believed that “it can be a really helpful tool for the very few who use it – students who have complex questions involving more than a single exchange or who prefer real-time communication” (LJ1). While not sure, he hoped that students did not use the service because they already understood how to complete their research (LJ1).

Due to the technical problems with Blackboard® chat, the embedded librarian sought assistance from the library’s information technology librarian “to develop a chat widget” to use in Blackboard® (LJ1). They discovered, however, that Blackboard® “has no reliable tools for virtual office hours.” When he learned that the institution’s Blackboard® administrator would not permit embedding external code for the library’s

chat widget, the librarian proposed providing a link in the Blackboard® course site to the library's chat widget. This solution worked "far better than the Blackboard® chat feature: the availability is constant, despite activity; multiple dialogues can be managed in different windows; logging chat is easier; and opening other windows for research is much easier" (LJ).

Future enhancements to the work of the embedded librarian. Data emerging from the embedded librarian showed that enhancements in communication, planning, supporting resources, and technology functionality were needed in future implementations of the embedded librarian program.

Discovering that the real time introductions via WebEx were successful in this course, the librarian encouraged including this *communication* vehicle in future courses (L1). In addition to establishing a relationship with the students, the WebEx communication helped the instructor and embedded librarian clarify their roles for the students. The embedded librarian cited the need for greater advanced *planning* to review accuracy of library-related *supporting resources* posted by the instructor. The librarian also identified the importance of adding supporting resources such as technical instructions for optimizing use of Blackboard® chat and for downloading applications needed for the course. Based on *technology functionality* problems encountered, he indicated "if there are more participants and the technical problems become more hurdles than annoyances, I will propose a different tool for future virtual office hours" (LJ1).

Case Two

Case two - course context. Case Two was developed from a five and a half week summer session online graduate course in the college of health professions. The

course was designed for master's and doctoral degree seeking students. As described in the syllabus, the course focused on analysis and discussion of theories and philosophical assumptions underlying occupation including issues in the field of occupational therapy and possible strategies to implement change in clinical practice. By the completion of the course, it was expected that students would be able to

“discuss the historical development of occupational therapy as a health care profession and how various theories contributed to its growth; describe the theories/professions from which occupational therapy theory/frames of reference emanates; describe, compare, and contrast the philosophical assumptions and the theoretical concepts of major occupational therapy theorists; describe the impact that theory has on occupational therapy clinical practice and client outcomes; explain the importance, impact, and content of philosophy in occupational theory; discuss approaches to theory development in occupational therapy; and link health policy, theory, and philosophy to clinical intervention” (Course Syllabus p. 1).

The Blackboard® course management system served as the technology foundation for this online course.

Instructor and librarian. The instructor for this course had a doctoral degree and had taught this course eight times previously, six times face-to-face and twice online. The embedded librarian assigned to support this course was the institution's distance learning and resource sharing librarian. He had not provided any type of library support to this course in the past, and he had no educational background in the subject area.

Students. Sixteen students were enrolled in this course. Seven (44%) of the sixteen students responded to an online survey distributed by the researcher. The

researcher interviewed four (25%) of the sixteen students enrolled in the class. Survey respondents were anonymous, so it is not known if the interviewed students also responded to the survey.

Based on survey responses, one undergraduate student and five master's degree seeking students were enrolled in the course. One survey respondent indicated "other" and did not provide a comment. Of the four students interviewed, one reported being a doctoral student. According to one of the interviewed students, "we just got back from six months of hospital affiliation" (S2-2).

Three (43%) of the seven survey respondents indicated this course was their first fully online class. Two (29%) of the seven survey respondents had taken a fully online class in the past five years. Five (71%) of the responding students had taken at least one hybrid course in the past five years, and one respondent had never taken a hybrid course. Six (86%) of the seven survey respondents had received information literacy instruction as part of a prior course at the university.

Communication. The instructor for this course interacted with the embedded librarian by email and telephone. Initial communication about hosting the embedded librarian in this course was by telephone and occurred two days after the course started, which affected collaborative planning. Their communication focused on assistance to be provided to students. For example, the instructor explained they communicated "a little bit about some misunderstandings and that the students needed additional information about some APA issues."

Students in this class reported communicating with the embedded librarian using Blackboard[®] discussion board, e-mail, instant messaging, and chat (from survey results &

interviews). The embedded librarian “sent emails to the whole class introducing himself and offering office hours” (S2-4). The instructor observed that the embedded librarian “set up virtual office hours and encouraged students to contact him at other times” (In2).

Assistance from librarian. The librarian analyzed the course syllabus, created a support schedule, and shared it with the instructor via e-mail. The schedule outlined when the librarian would provide pre-determined support during the term such as launching the “Ask A Librarian” discussion board, holding virtual office hours, and posting instructional materials.

The librarian established an “Ask A Librarian” discussion board on the Blackboard® course management site. In addition, he responded to research related questions posted on the main course site and posted instructional materials about citation styles, resource evaluation, and plagiarism on the course site. He held virtual office hours four times across the five and a half week session: two weeknight evenings for one hour each and two weekend sessions for one hour each.

According to the embedded librarian’s question statistics (LQS), he responded to a total of fifteen direct questions from six students. Eleven questions were asked via e-mail, three questions were received through the discussion board, and one question was a follow-up to virtual office hours. Students initiated ten of the fifteen questions in the 12:00 noon to 5:00 PM time period (LQS). Fourteen questions focused on citations, and one question was about library services.

The embedded librarian’s primary role in this particular class was to assist students with APA citations: in text citations, referencing on the reference page, and formatting. Three (43%) of the seven students responding to the online survey indicated

they sought the librarian's assistance in using the proper style for citing sources.

According to the online survey results, the students also sought assistance in accessing online databases from outside the library; constructing a search strategy; using the library's online catalog; using and searching in online databases; and selecting journals to use.

Survey respondents indicated that the embedded librarian provided the following assistance and support through the Blackboard® course site: general information about library resources and services; link to the library website; links to tutorials to help use the library and do research; links to help guides to help use databases, citation style guides, or other library resources; responses to questions they posted; and responses to questions other students posted. Table 12 illustrates the types and frequency of assistance sought by the students and the types and frequency of assistance provided by the embedded librarian in case two, as reported by the students responding to the survey.

Table 12

Embedded Librarian's Assistance to Students in Case Two - Survey Responses

(N = 7)

Assistance Sought by Students		Assistance Provided by Librarian via Blackboard®	
Type	Frequency	Type	Frequency
Using proper citation style	3	General information about library resources & services	2
Remote access to online databases	2	Link to library website	2
Constructing a search strategy	1	Links to tutorials about using library & doing research	2

Using library's online catalog	1	Links to help guides for using databases, citation styles, or other library resources	2
Using & searching in online databases	1	Responses to questions you posted on Blackboard®	1
Selecting journals to use	1	Responses to questions posted by other students on Blackboard®	1

In addition to having an embedded librarian, the students in this course benefitted from the presence of a subject specialist librarian. The instructor (In2) had a “long-standing arrangement with [the subject specialist librarian] who routinely provides information sessions to students at all levels of our program regarding accessing databases and research strategies and APA support, so we continued that [arrangement] this semester.” The instructor and student (S2-2) indicated that the subject specialist librarian met with the students via WebEx to provide an information literacy instruction session covering topics such as using the subject gateways, selecting the best databases to use, narrowing searches, and choosing appropriate articles. Due to the presence of the subject specialist librarian, the embedded librarian’s support focused heavily on assisting students with APA citations.

Resources used by students. Students reported in the survey responses and interviews that they used a variety of library resources to conduct their work including the library’s web site, library’s online catalog, online databases, electronic journals, tutorials about using the library to do research, online subject gateways, library help

guides and interlibrary loan services. Among the resources used, student S2-1 pointed out, “They have APA citation examples on the library website. I’ve used those a lot. . . . The only other thing I think I’ve used the library for is just for the articles.”

Some students described their particular strategies for accessing resources. Student S2-1 explained “if I need a book and I will use it for it a while, sometimes I’ll just find it really cheap on Amazon, so I don’t really look for books a lot in the library unless I know ahead a time that they have it.” Student S2-4 said, “When I was done with doing my searches at home, whenever I went to the library, I just went directly to what I needed and then left.” Student S2-4 also said that at times she purchased her own materials for the course.

Case two - instructor perceptions. The interview with the instructor generated data to answer research question one: “What is the instructor’s perception of how the embedded librarian works in an online class?” Three themes emerged from the data analysis: value of embedded librarian; challenges to the work of the embedded librarian; and future enhancements for the work of the embedded librarian. See Appendix G for the coding scheme generated for data from the interview with the instructor. The instructor’s perceptions are described in terms of the value of the embedded librarian; challenges to the work of the embedded librarian; and future enhancements to the work of the embedded librarian.

Value of the embedded librarian. Communication, student characteristics, librarian competence, assistance provided to students, assistance provided to instructor, student learning, and types of courses to support emerged from the instructor interview data as factors related to the value of the embedded librarian.

The means of *communication* and the quality of *communication* were identified as elements contributing to the value of the embedded librarian. According to data from the interview with the instructor, the embedded librarian initiated communication with her by e-mail. The embedded librarian let her know “how he was going to connect with the students, and he set up virtual office hours and encouraged students to contact him at other times” (In2). The librarian also communicated with the instructor to clear up “some misunderstandings” and ensure students received additional information about their assignments (In2).

The instructor described the embedded librarian as particularly valuable due to the *characteristics of students*. Instructor In2 “was really pleased to find out about this additional support. I was excited about it because we find in a graduate level class that students aren’t always prepared as much as we would like them to be for the rigors of first accessing sources and evaluating sources and then using sources.”

The instructor (In2) referred to the *librarian’s competence* and *assistance to both the students and instructor* as valuable. “I think the librarians definitely have more skills and knowledge in areas than I do. ... I think bringing the added knowledge and skills to the course is an enhancement for the course, support to the instructor, and gives the students an additional resource, which is a good thing” (In2).

The instructor believed the *assistance provided* by the embedded librarian benefitted the students. “It’s my understanding that he did work with a number of our students, just a couple of our students, and provided them with some support” (In2). The embedded librarian was “available to support the students ... in ways ... related to research strategies and APA usage” (In2). Acknowledging the value of the embedded

librarian in helping students with citation style, the instructor explained, “Even after this class was over, [the embedded librarian] and I had at least one e-mail conversation because a rather blatant incident of plagiarism surfaced” (In2).

The instructor elaborated on the positive effect the embedded librarian had on *student learning*. “I think this summer the librarian involvement definitely helped the students. I could see, even though I didn’t get direct feedback, I could sense that some of the students had contacted [the embedded librarian] for support, and it improved their work. I think the potential for that role in helping with this particular course delivery in the future is great. I think it could be very, very helpful” (In2). Instructor In2 commented that the embedded librarian was particularly valuable for this *type of course*, and she would “absolutely” recommend including an embedded librarian in online courses to her colleagues.

Challenges to the work of the embedded librarian. Challenges to the work of the embedded librarian that emerged from the data collected in the instructor interview related to planning, role clarification, timing of the course, student characteristics, and concern for student anonymity. Collaborative *planning* between the instructor and librarian was negatively affected by a delay in contact to plan for embedding the librarian in this course. Initial contact occurred two days after the course started. “Just because of the timing [i.e. delay in planning], we didn’t really collaborate in terms of how the course was initially set up” (In2).

The instructor recognized a “need to clarify how she and the librarian would work together” in the areas of the course “where the students use the library and resources” (In2). In addition, the instructor realized the need to *clarify roles* due to the novelty of

having a librarian embedded in an online course. “It was the first time we had worked together with this model,” and expectations about roles and responsibilities were not clear (In2). Further, instructor In2 was uncertain about which role to designate for the librarian in the Blackboard® course management system. Appropriate role designation in Blackboard® would help students understand the presence of the embedded librarian.

The instructor suggested that the *timing of the course* during the summer might not have been ideal for having an embedded librarian. She stated, “I think it was a bit of a challenge because this was a summer class, and it was really short,” in this case five and one half weeks long (In2).

Instructor In2 explained that *student characteristics* present challenges as well. The course is “a unique challenge for me ... because in our program, they come from all kinds of backgrounds. [The students] are in that position where they just don’t know anything about the kinds of journals we might be using. It is all new territory for some of them” (In2). Student lack of experience with research and research journals presents challenges for both the instructor and the librarian. “For students who, let’s say, coming from a social work background or something and then they enter [this program], they really are in that position where they just don’t know anything about the kinds of journals that we might be using” (In2).

Another challenge noted by the instructor pertained to *student anonymity*. The instructor was unsure about the boundaries of student confidentiality in this teaching situation and didn’t know if it was appropriate to talk with the embedded librarian about the students by name. “Am I supposed to know the student’s name? I need to clarify how we talk about students getting support, and if we might have talked more openly”

(In2). She indicated that designating the librarian as a co-instructor in Blackboard® might facilitate information sharing and provide the librarian with access to information about student performance, which would ultimately benefit the students.

Future enhancements to the work of the embedded librarian. Data that emerged from the instructor interview revealed communication, planning, role clarification, timing of the course, assistance provided to students, concern for student anonymity, and types of courses to support as factors to consider in future enhancements to the embedded librarian program. The instructor also pointed out the need to enhance the quality of *communication*, specifically timing and frequency. “It would have been great from my end if I had been more proactive in contacting [the embedded librarian] myself, just checking in with what he was seeing from my students, and then carving out my course for him to provide some other kind of support for my students” (In2). Instructor In2 advised that, in the future, more preliminary *planning* by the instructor and embedded librarian is essential. “I would have conversations ahead of time so that I could plan about time and space in the course to integrate the library services” (In2).

Instructor In2 said she would *clarify the role* and presence of the embedded librarian, how she and the librarian “would work together where students use the library and resources.” The instructor referred to *timing of the course*, explaining, “I would love to have another opportunity, particularly during a regular semester, to get the model integrated into the course Blackboard® because I think that the librarian support is really helpful” (In2).

In terms of *assistance provided to students*, instructor In2 recognized the need to placed greater emphasis on intellectual property rights and copyright in this particular

course after discovering a blatant case of plagiarism. To solve the question of how to handle *student anonymity*, instructor In2 would “clarify how we talk about students getting support. I think we might have talked more openly, but maybe you can. I just didn’t know. So my point is for the future, I want to clarify that kind of stuff.” In looking ahead at *types of courses to support*, instructor In2 suggested that the embedded librarian would be very helpful in her doctoral courses.

Case two - student perceptions. Research question two asked, “What is the student’s perception of how the embedded librarian works in an online class?” Student data was generated through interviews, online surveys, and postings on Blackboard®. Three themes emerged from the data generated by students: the value of the embedded librarian; challenges to the work of the embedded librarian; and future enhancements to the work of the embedded librarian. See Appendix H for the coding scheme of student data in case two. Based on the data and derived themes, the students’ perceptions of the value of the embedded librarian, challenges to the work of the embedded librarian, and future enhancements to the work of the embedded librarian are described below.

Value of the embedded librarian. Data generated from case two student interviews, surveys, and Blackboard® posts related to the value of the embedded librarian fell into the following categories: communication, timing of course, student characteristics, librarian availability, assistance provided to students, student learning, and types of courses to support.

Communication. Two of the interviewed students in case two appreciated the means and quality of the embedded librarian’s communication. A survey respondent wrote, “I think the chats were really helpful. Continue to conduct them with students. It

is helpful to have an easy way of communicating with the librarian when having a class that is completely online.” Another survey respondent said, “I benefitted from being able to e-mail the librarian my questions.” Student S2-2 expressed appreciation for the librarian’s reference support via instant messenger.

Blackboard[®] was also a beneficial means of communication. When students posted questions on Blackboard[®], the embedded librarian posted the answers on Blackboard[®] so that everyone in the class could read the responses. As student S2-4 commented, “then that way, it was like, ‘Oh, now that was a good question. I would have asked it also,’ um, then it was already asked. So, it was made available to everybody.”

According to student S2-2, the embedded librarian’s “ability to interact with us virtually at specific times - that was really helpful. ... The fact that he set up specific hours, umm, to help us out has been really helpful too. I liked that, umm. So for example, we have a paper due tomorrow and he went out of his way to make hours pretty late tonight and to work around a different class we have, umm, just so that he’s able to answer any last minute questions before tomorrow’s due date. So, umm, that was helpful.”

Timing of the course. Student S2-2 asserted the embedded librarian was particularly helpful in this course due to its timing, as it was a shorter summer session with a research component. “For this course specifically I think [the embedded librarian] was essential. For other courses I don’t know if it would be necessary, but for this one I think that it was very much necessary especially because the nature of, uh, summer class. I mean you’re so, you’re not really connected to the school (S2-2)

Student characteristics. The students indicated that the value of the embedded librarian could have been affected by student characteristics, for example, prior experience in doing library research. Some of the students possessed the library research competencies upon entering this course. Six (85.7%) of the seven survey respondents indicated they had received instruction from a librarian on how to do library research as part of a prior course at this institution.

One interviewed student (S2-1) indicated she had “taken classes before where you’ve had to go to the library website and periodicals and things like that, but I have used these skills before. I’m not really computer savvy, but I know how to search for articles through the library website, get the author and the DOI and all that kind of stuff. I’ve used the skills before in undergrad.” Student S2-3 reported having general knowledge of APA and how to use the manual. This student (S2-3) explained that in a previous undergraduate course a librarian showed how to search for articles.

Some students required more assistance than others. Student S2-2 explained that the students had just returned from a six months hospital affiliation “so I think that a lot of us forgot how to research.” When asked about library skills and competencies needed for the course, student S2-4 replied, “I’m an older student. I’ve come back to school so this is really a good question. Um, I needed to have the familiarity with um, the databases and doing online searches. Um, because what I was accustomed to long ago was going and looking it up in the periodical book.”

Availability of librarian. Three of the four students interviewed valued the general availability of the librarian. Beyond assistance with APA citations, student S2-4 commented, “Just being, knowing that he was there was nice.” Student S2-4 continued, “I

think it's an important piece to have some availability and somebody that strictly focuses on online courses. ... Again, I just, I think there's some value with having, kind of, a go-to person, ... just knowing if you're in an online course you can ask a certain person through the library staff and having a familiarity with the library staff is useful.”

Two students specifically voiced appreciation for having the opportunity to ask the embedded librarian questions rather than asking their instructor. Student S2-1 said, “Because [the embedded librarian] is here, I’m not asking my professor a million questions when she may feel that we should do it on our own. I feel like there’s a certain couple questions that somebody needs to know for writing a paper, and [the embedded librarian] is the guy to go to. So I definitely trust his input. I think he’s like a really great resource to have for the class for sure.” Student S2-3 described the librarian as “kind of a safety net, I guess. If you were having an issue, it is somebody that you can go to that’s not the professor. ... And the professor wouldn’t have to know that you’re seeking help for so much or for so little, or anything like that.”

Assistance provided to students. In addition to the assistance reported by survey respondents in Table 12, all of the interviewed students reported ways in which the librarian provided valuable assistance in the areas of research and citation skills, recognizing the importance of those skills in order to succeed in this course. Student S2-3 explained they “needed to know APA format, needed to know how to find literature - searching online and in print and using textbooks to find information, and then accurately citing the information.” Student S2-4 reported, they needed “to know, uh, which databases would be useful ... how to search through the databases, how to use keyword searches, um, how to know when you're requesting a, uh, an article, if it's gonna be just

the abstract versus the full text and all that kind of stuff. [These] were definitely skills that were important.”

Student S2-1 claimed “I feel like the APA manual, obviously in [this] program, it’s sort of like our Bible, but it’s not very user friendly ... so I often have a hard time finding what I need to find in there.” She indicated that, “with [the embedded librarian] being there, I can ask him questions that I have hard time even finding in the APA manual, because I feel like the APA manual ... is not very user friendly. I think I’ve asked [the embedded librarian] maybe two or three questions and he’s always been great about answering to the best of his ability, so I’ll definitely use him again. ... One of the things I’m usually scared about is accidental plagiarism” (S2-1). Student S2-1 described an hour-long session the librarian held to answer any last minute questions, such as APA questions, prior to a paper being due. Student S2-3 reported being confused about an element of the APA, and when she consulted the embedded librarian “he kinda verified what I was reading in the manual and on OWL Purdue website.” Student S2-4 reported that the embedded librarian provided the research assistance she needed for the course.

One of the survey respondents commented that the embedded librarian “was extremely helpful when I needed him. The APA manual is not user-friendly, but [the embedded librarian] was able to help me receive the information I needed and had been looking for quickly!” Another survey respondent wrote, “Our professor was not able to give us citation or research assistance outside of class, so the librarian was especially helpful.”

Student learning. Student interviews generated data illustrating that embedded librarian had a positive effect on student learning. Student S2-2 remarked, “I think I

could have done it, but I don't think that I would've done as effectively, and I wouldn't have earned as good as a grade probably." Student S2-1 described the embedded librarian's importance by saying, "He's the guy to go to. So I definitely trust his input, and I think he's like, a really great resource to have the this class for sure." This student (S2-1) summarized that the embedded librarian help[ed] us actually writing a paper and all the citation stuff. I think he's a really great resource." When asked about the value of the embedded librarian to success in the course, student S2-4 replied, "Oh, it's really huge."

The data emerging from the student survey provided additional insight to the impact of the embedded librarian on student learning and student success in the course. The survey asked students two specific questions about the effect the embedded librarian had on them. 1) "Do you think having a librarian assigned to this class contributed to your success in the course?" and 2) "Do you think it was valuable to you to have the librarian participate in the Blackboard® course site?" When asked if having a librarian assigned to the class contributed to their success in the course, four (57%) of the seven survey respondents replied "yes;" two (29%) of the students responded "not sure;" and one student indicated "other" without an explanation. When asked if it was valuable to have the embedded librarian participate in the Blackboard® course site, the responses were similar: four (57%) of the seven respondents replied "yes;" two (29%) of the students responded "not sure;" and one student indicated "other" without an explanation. Table 13 displays student responses to these two survey questions.

Table 13

*Value of the Embedded Librarian to Students in Case Two - Survey Responses**(N = 7)*

Librarian Contributed to Student's Success in Course		Librarian Participation in Blackboard [®] Course Site Valuable	
Yes	4	Yes	4
No	0	No	0
Not Sure	2	Not Sure	2
Other	1	Other	1

One survey respondent commented the embedded librarian “was up to date on the assignments in our class!” Another survey respondent said, the embedded librarian “helps to reinforce and explain research information.” The positive survey responses and absence of clear negative responses suggest that survey respondents believed the embedded librarian was valuable in this course. The survey data supports the qualitative data indicating that the embedded librarian contributed to student learning in this course.

Types of courses to support. Student data pointed out the value of the embedded librarian in supporting this type of course. A survey respondent described the embedded librarian’s participation in the Blackboard[®] site as valuable, “especially for a course with a heavy writing/citation load.” Student S2-2 explained, “I think that for research based courses and for, umm, classes with a heavy writing workload and citation workload, umm, like this course, it is very helpful.” Another interviewee (S2-1) commented, “I think it’s just a great resource, especially for classes that are online and are research-based.” Student S2-1 also referred to the nature of this course and how it affected the importance of the embedded librarian. “I think that, especially since our class is online, it would be helpful for other online classes [to have an embedded librarian], because you don’t see the professor. So doing this class online has been a little bit of a challenge. Umm, just

because it's not like I can go right to [the professor's] office and talk to them and solve all my questions outside of class. Umm, so I think it would be good to have one of these librarians. Even if it's just once in a while for a class that's not really APA based" (S2-1).

Challenges to the work of the embedded librarian. Data that emerged from student interviews and surveys provided insight to challenges to the work of the embedded librarian. The data from Case Two related to communication, schedules of students and librarian, student characteristics, librarian availability, assistance provided to students, and technology functionality.

The quality of the librarian's *communication* with students contributed to the challenges. Student S2-1 remarked that the librarian "said he would usually answer within 24 hours. Sometimes it's been within like two or three days. So maybe just a shorter time frame if anything."

Problems related to the *schedules of the students and librarian* were mentioned. Student S2-2 reported, "There was some confusion with the hours that [the embedded librarian] would help us out. Like the hours he has tonight for example, were changed. I think this is, like, the third time that they've changed to accommodate, umm, our other class schedule, and it just would've been, I think, better if someone from our class was able to ... communicate with him, like, what specific hours we could not be with him" (S2-2). Student S2-4 described additional problems with the virtual office hours schedule. The embedded librarian's "office hours are during our class and really, if you think about it, I really don't want to do a lot of multitasking when I'm supposed to be listening to the presentation. So, I wish that his office hours were ... if he wants to offer them during the

class that's fine, and you talk about being embedded, that's truly embedded because we're all at the computer at the time, but on the other hand, are there other options?" (S2-4).

A *student characteristic* particular to this course was that the students had just returned to campus after six months of hospital affiliation. As one student explained, "I think that a lot of us kind of forgot how to research" (S2-2). While adding to the value of the embedded librarian, this factor may have also contributed to the challenges of the work of the embedded librarian. Student S2-2 also pointed out that some of the students in the class "aren't really sure how to access [the embedded librarian]," which affected one type of instruction they needed.

The librarian was not *available* at the start of the course, creating difficulty for student S2-2. "I was unable to ask him APA related questions for my presentation because I went earlier than he was assigned to our, umm, course" (S2-2). Student S2-3 identified a need for additional *assistance to the students* after discovering that some electronic journals were not available through the library. "You would read the abstract of a really great article and then not be able to read the rest of it ... It appeared that we weren't subscribed. It also could be that this, um, article is not in a PDF at this point" (S2-3). This situation demonstrated the need for the embedded librarian to explicitly provide instructions for accessing journal articles unavailable from the institution's library.

Technology functionality emerged as a factor that contributed challenges to the work of the embedded librarian. Student S2-4 reported difficulty with the chat tool. "I was unable to use the chat function of the website, so I resorted to emailing" (S2-4).

This student explained that the chat function “didn’t show up on the website. I couldn’t understand where it was – if it even existed” (S2-4).

Future enhancements to the work of the embedded librarian. Data emerging from the information generated by students revealed the following elements related to enhancing the work of the embedded librarian: communication, role clarification, student and librarian schedules, librarian availability, assistance provided to students, formal library instruction, and types of courses to support.

Means of and quality of *communication* emerged from the student data as future enhancements for the work of the embedded librarian. Student S2-2 proposed “a document that could have been posted to our Blackboard® website about how to access [the embedded librarian] would have been helpful.” One survey respondent commented that the embedded librarian should “teach students how to access the embedded librarian (aside from e-mail).” Another survey comment was, “I benefitted from being able to e-mail the librarian my questions, so I suggest librarians continue to contact students via e-mail and provide reasonably timely responses.”

Student S2-2 suggested that it would be helpful if someone in the class communicated to the embedded librarian the specific times students would not be available for virtual office hours. Student S2-1 recommended quality enhancements to communication by ensuring the embedded librarian responds to e-mail within 24 hours.

The data suggested *role clarification* as an important enhancement for the future work of the embedded librarian. The responsibilities of and assistance available from the librarian were not universally clear. When asked if they would recommend having an

embedded librarian in other online courses, student S2-1 replied, “Well what other things do the librarians do? Is it mainly just APA and typing or do they do other things as well?”

Another improvement for the future, according to the student data, would be better coordination of *student and librarian schedules*. Specifically, student S2-3 observed that the librarian’s virtual office hours should not conflict with the scheduled class WebEx sessions.

Student S2-2 echoed the instructor’s recommendation regarding the *librarian’s availability*. “I think that in the future there, it would be helpful if he was with us kinda earlier on. Like, I had a presentation very early in the semester, and it’s already a short semester. So, umm, to have someone from day one or from week one would have been helpful” (S2-2).

When asked for suggestions for improving library support to students in online courses, one survey respondent wrote, “continued support and easy access to help if necessary.” The data suggested future enhancements in two specific areas related to *assistance provided to students*. Student S2-2 expressed a need for instruction on accessing personal files from the institution’s computer system home drive. “One thing that I think that, umm, the library could cover, but sometimes isn’t covered is how to access your H-drive. Your, umm, drive from the campus. ... A lot of us didn’t know how to and that could be really helpful” (S2-2).

Survey data revealed student views about the need for the embedded librarian to provide *formal library instruction* in this course. Students gave mixed responses to the survey question that asked if they thought a formal structured library instruction session would enhance this course. Three (42.9%) of the seven survey respondents indicated

“Yes,” a formal structured library instruction session would have been valuable in this class. Two (28.6%) of the seven survey respondents answered “No.” Two respondents answered “Other.”

One survey respondent wrote that a formal library instruction session would be beneficial “to make sure everyone was on the same page as to the librarian’s role in the class.” Another survey respondent disagreed commenting, “I don’t think it should be necessary, unless most of the class has the same issues regarding research.” One survey respondent shared, “I think for this class in particular, the majority of the class has received a library in-service three times since entering the program.” Another student reported in the survey, “I received training on using the [library] website for locating research articles during my undergraduate courses. As a graduate student, it is my responsibility to apply what I know and seek assistance as needed. A formal structured library instruction would take away from time spent understanding and applying the concepts of the course.”

When considering the *types of courses* an embedded librarian should support, student suggested several selection criteria. Applying a return-on-investment approach, student S2-3 recommended that the course research component be considered. “If there are resources, it couldn't hurt, um, but if it's like a lot of financial or, um, time consuming resources that we don't have, then it might not be beneficial for all courses. So, you would pick and choose the ones that, I, that have more research to the ones that have less research required” (S2-3).

Student S2-2 linked the value of the embedded librarian to the growing presence of technology in education. “Umm, I think that ... having a virtual librarian is, umm, I

think it was a really great addition to the class and I think, umm, it's something that should be implemented in more classes as we do move towards, umm, more, umm, technology, technologically involved umm, perspective in our classes.”

Student S2-1 emphasized the importance of the embedded librarian in graduate level courses, “Because in the online grad programs they could up the ante for what you need to do and how well you need to do it.” Student S2-1 also commented, “I think it would be good to have one of these librarians, even if it's just once in a while for a class that's not really APA based...I think it's just a great resource especially for classes that are online and re research based.”

Case two - librarian perceptions. Research question three asked, “What is the librarian's perception of how the embedded librarian works in an online class?” Librarian data was generated through an interview (L2), the librarian's “Embedded Librarianship Journal” (LJ), “Embedded Librarian Question Statistics” (LQS), “Embedded Librarian Proposed Support Schedule” (LSS), and postings on the Blackboard® course management site (Bb). The data generated by the embedded librarian across the four cases in this study was coded collectively. Appendix M presents the coding scheme for the librarian's data across all four cases. Three themes related to the embedded librarian's perceptions emerged from the data: the value of the embedded librarian; the challenges to the work of the embedded librarian; and future enhancements to the work of the embedded librarian.

Value of the embedded librarian. Data collected from the librarian specifically related to case two showed that the assistance he provided students contributed to his value. The librarian (L2) reported that students in this course were among those who

accessed him the most across all the cases in this study. The instructor emphasized precise use of the APA citation style enabling the librarian to target that skill. “[The instructor] put her expectations out there clearly to the students, and I got lots of very specific questions about citation and APA from those students who were taking extra care with the details.” The *assistance he provided to students* addressed the questions he received. According to the librarian’s statistics, 14 (93.3%) out of the 15 of the questions case two students asked him directly were about citations (LQS).

Challenges to the work of the embedded librarian. Three factors emerged from the librarian’s data as contributing to the challenges of his work: communication, planning, and assistance provided to students. In this case, *communication and planning* challenges were entwined. The preliminary planning communication with this instructor was insufficient, “probably the shortest turnaround time and maybe least personal interaction in terms of pre-collaboration” according to the embedded librarian (L2). As a result, the embedded librarian and instructor needed follow up communication to clarify via e-mail some course logistics, instructional materials, and common expectations of the students (LJ). The embedded librarian noted in his journal, “There were issues with crossed wires after my discussion with [the instructor]. In her post to students, she volunteered a format of the APA presentation (WebEx) we hadn’t determined together, and I wondered whether the tone conveyed about the support was the most positive possible. Again, more advanced planning would have helped” (LJ).

Another challenge arose when the librarian *provided assistance to students* on their citations. He reviewed the students’ bibliographic citations and initially provided “interlinear comments in Word for each specific error, and then provided links to our

online resources in the margin for each instance of a mistake” (L2). In addition to being extremely time consuming, this approach led the librarian to feel he “was being used as an editor rather than an instructor” (L2). He ultimately met this challenge by simply providing “global responses with categories of errors with links to relevant online resources” (L2).

Future enhancements to the work of the embedded librarian. Communication, planning, role clarification, and instruction and assignments emerged from the librarian data as areas for potential enhancements to the work of an embedded librarian. Improved *communication* and early *planning* with the instructor were data points related to enhancements of the embedded librarian’s work (L2). In addition, the librarian (L2) suggested that *role clarification* would improve the content, point of service, format, and responsibilities of the embedded librarian’s work.

For this course in particular, the librarian’s data pointed to a need to strengthen and streamline citation *instruction and assignments* for students. The embedded librarian (L2) proposed a two-pronged approach in which the instructor would create an assignment requiring students to submit a few references for which the librarian would give detailed feedback, creating “a manageable and sensible scaling of student learning.” Then the librarian would provide more global responses with links to resource guides and be available to answer specific questions about individual citations. Line-by-line responses to entire reference pages would no longer be provided. The embedded librarian (L2) discovered an egregious problem with reference citations in one student’s final paper. The student’s reference page revealed heavily reliance on Internet sources, popular and biased sources, and sources not actually used in the paper. The librarian

suggested that a carefully graded annotated bibliography *assignment* early in the course might be a strategy for assisting students in producing higher quality work at the end of the course.

Case Three

Case three - course context. Case three centered on a fully online undergraduate course in the department of political science offered during a ten-week summer session. This course was a multi-method introduction to political research, teaching how to frame questions about politics, how to find answers to those questions, and how to present the answers in a persuasive manner using quantitative and qualitative methods. By completion of the course, students would

understand various approaches to research; frame questions about politics that lead to fruitful research; identify political phenomena that can be researched and effectively choose topics for research; conduct critical literature review; find the legislative histories of bills passed by the federal and state legislatures; create testable hypotheses, gather and enter data, and conduct simple descriptive and inferential statistical tests; effectively present the findings of political research in written work; and read political research critically to evaluate its validity (Course Syllabus, p. 2).

The Blackboard® course management system provided the technology framework for delivery of the course.

Instructor and librarian. The instructor (In3) had a doctoral degree and had taught this course in either face-to-face or online formats for more than 25 years. He designed and developed the online version of this course to be nearly identical to the

face-to-face version. In fact, the online version was a digitized version of the face-to-face course that was taught and recorded in a digital media classroom. The instructor described it as different from many online courses in which materials were delivered through text files. Instead, the materials for this course were delivered through online recorded class sessions providing an in-class experience through the student's own computer. The Blackboard[®] course management system housed the pre-recorded class sessions, PowerPoint presentations, handouts, class notes, assignments, announcements, and discussion boards for the class. Students were able to meet with the instructor via Skype, e-mail, and telephone. Face-to-face in-person appointments with the instructor were also available.

The embedded librarian (L3) supporting this course was the institution's distance learning librarian, had never worked with this course in the past, and did not have expertise in the discipline of the course. In the initial Blackboard[®] posting welcoming students to this course, the instructor included a statement that the class would be participating in a research project that addresses the question "What is the effect of using an embedded librarian in an online course?" He explained that the embedded librarian will work with the course; participate through Blackboard[®]; may read some of the students' posts and assignments; and that the research and work of the embedded librarian will have no bearing on their grades. (In3 - BB post, 5/31/12) In the past, a subject specialist librarian supported this course.

Students. Seventeen students completed this undergraduate course. The researcher interviewed four (23.5%) of the seventeen students, and ten (59%) of the seventeen students responded to the researcher's online survey. Survey respondents were

anonymous so the researcher did not know if the students interviewed also responded to the survey. Nine (90%) of the ten survey respondents indicated they were undergraduate students and one indicated “other” without an explanation. Of the ten students responding to the survey, nine (90%) had previously taken at least one fully online course, and six (60%) students had previously taken at least one hybrid course.

According to the instructor and the students interviewed, this course required students to use library research skills. All four students interviewed reported they had some library research skills prior to this course, however two students contradicted themselves when clarifying their responses. Student S3-2 reported that he “had certain skills, like ... how to cite my sources. However, like, I seldom use the library. ... I pretty much need help in terms of finding what I need to find in the library.” Student S3-1 explained, “the capacity for the library skills, obviously, were there, but as far as practical knowledge went, I did not [have the library skills needed before entering the course]. Um, I’d thought of myself as a competent writer before that class, but I’d never done that type of research, which was political in nature.” Student S3-1 later said “Yes, I knew how to research, I really – the big linchpin for this course was, I’d say, would be where to research.”

Nine (90%) of the ten survey respondents had received library research instruction from a librarian as part of a prior course, and eight (80%) of those nine students had received the instruction at the institution in the study.

Communication. Communication between the instructor and embedded librarian occurred via e-mail or telephone. They never met face-to-face. The instructor informed the librarian of assignments and shared feedback he gave to the students so that the

librarian could see what assistance the students might need. “We’ve been in touch, uh, back and forth whenever something’s coming up like an assignment. There’s [sic] times when we’ve talked. It has not been a constant flow of information, but I’ve tried to keep him apprised [sic] of what’s going on in the class” (In3). Similarly, the librarian informed the instructor of his activities. The instructor and embedded librarian did not coordinate in terms of integrating information literacy into the class. Instructor In3 explained, “What we did was on an individual student basis, we would, you know, deal with things that a student needed. ... If a student needed access or needed information about something, I would either send them to [the embedded librarian], or they would go to [him], and then [he] would contact me to talk about what was needed and how it was done.”

The embedded librarian introduced himself via Blackboard[®] and established an “Ask the Librarian” discussion on Blackboard[®]. He announced that he was available to help the students with any question they may have with the literature review research, library services, and access to materials. He invited the students to click on the “Ask a Librarian” tab in the course Blackboard[®] site and use the contact information there or the linked discussion board to ask questions (L3 - BB posting 6/4/12). E-mail was reported as the most frequent method of communication between the embedded librarian and students, according to interviews and survey responses. He was also available via chat (LSS), and he met in person with at least one student (L3).

Assistance from the librarian. The embedded librarian reviewed the course syllabus, created a support schedule, and shared it with the instructor. The schedule listed when the librarian would provide an array of standard support such as opening the

“Ask the Librarian” discussion board tailored to the course and hosting virtual office hours. The schedule also indicated target dates when the librarian would provide assignment-specific support. In addition to introducing himself and posting his contact information on Blackboard® Announcements, the embedded librarian shared links to pertinent resources and alerted the students to contact the subject specialist librarian when he was away. The librarian provided virtual office hours five times for one hour each across the ten-week session at varied time periods: 8:30 – 9:30 AM; 12:00 – 1:00 PM; 5:30 – 6:30 PM; 7:00 – 8:00 PM; and 8:00 – 9:00 PM (L3 - BB 6/11 & 6/21/12).

Most of the weekly homework assignments did not require use of the library. Students could use the library or other sources to determine their research topics. The primary assignment for the class is a major research paper that required students to use research-based library resources to find empirical research about a political science topic. The students had to do a literature review, work with observed data compiled from prior research, analyze data using the SPSS statistical package, and write their research findings.

The instructor, rather than the librarian, taught the students how to use JSTOR and the Inter-University Consortium for Political and Social Research (ICPSR) database, both accessed through the university library’s website. He also taught the students how to use SPSS to analyze the data they retrieved from the ICPSR database.

The instructor reported that in this course the “meat of the librarian’s role” is during the literature review process (In3). The instructor cited that the ease with which students can find information on the Internet misleads them into thinking they have done effective research. “I explain that the appropriate literature review involves locating and

reading every single written piece of work that has ever been done on their topic. And, of course, they say, you're never going to do that, but that's what should be your standard" (In3).

Of the ten survey respondents, four (40%) students indicated they sought assistance from the librarian two or three times, two (20%) respondents indicated one time, three survey respondents indicated never, and one respondent reported "other" without an explanation. Of the four students interviewed, student S3-1 contacted the embedded librarian "a couple of times" and also used the subject specialist librarian. Student S3-2 used the embedded librarian to review his bibliography and help him find documents for his research. Student S3-4 reported contacting the embedded librarian three times, and student S3-3 said, "I didn't really contact the librarian."

The embedded librarian (L3) reported in his Embedded Librarian Questions Statistics document that five students asked him a total of eight questions, seven questions via e-mail and one via discussion board (LQS). Five of the questions requested assistance with searches, and three of the questions were related to assignments. Three additional questions were referred to the subject specialist librarian, and three other questions, all related to research topic selection, were referred to the instructor (LQS).

As reported in the interviews and through the survey, students sought assistance from the embedded librarian to "review, like, my bibliography just to be sure it looks correct" (S3-3); define a research topic; construct a search strategy; use the library's online catalog; access the library's online databases from outside the library; use and search in online databases; select journals to use; select an online database to use; and order materials from other libraries in the university system. The embedded librarian

provided a variety of assistance and information through the Blackboard® course site. He taught students how to use specialized databases needed for the course. He gave students an example of a literature review and provided links to resources about writing a literature review (L3-BB 6/8/12).

In addition to the online assistance received from the embedded librarian, student S3-4 “actually drove to the library when I was doing, um, my research proposal. I didn’t meet [the embedded librarian] but I talked with a couple librarians, actually.” According to the interviews and survey responses, the embedded librarian provided the following assistance through the Blackboard® site: general information about library resources and services; links to tutorials to help use the library and do research; link to the librarian’s website; link to the library website; links to subject guides to help find information about particular subjects; links to course gateways to help find information about a specific course; information about citation styles; and responses to questions the student posted on Blackboard® site. Table 14 reports the types and frequency of assistance sought by the students and the assistance provided by the embedded librarian through Blackboard® as reported by the students responding to the survey in case three.

Table 14

Embedded Librarian’s Assistance to Students in Case Three - Survey Responses

(*N* = 10)

Assistance Sought by Students		Assistance Provided by Librarian via Blackboard®	
Type	Frequency	Type	Frequency
Defining a research topic	3	General information about library resources & services	5
Constructing a	3	Links to tutorials	3

search strategy		about using library & doing research	
Using library's online catalog	2	Link to librarian's website	2
Remote access to online databases	2	Link to library website	2
Using & searching in online databases	2	Links to subject guides to find information on particular subjects	2
Selecting journals to use	2	Links to course gateways to find information about a specific course	1
Selecting online databases to use	1	Responses to questions the student posted on Blackboard®	1
Ordering materials from other university system libraries	1		

Resources used by students. The students used a variety of library resources to support their work including the online tutorials, librarian's website, library's website, online catalog, online databases, tutorials, subject guides and course gateways. Student S3-2 explained that he "just went up to the reference tab one time, and the rest of the steps even helped me find even more steps using this research databases that I didn't really know how to do. They have showed me how to get really specific or less specific." According to student S3-4, access to resources was "actually fairly easy. Um, I know, I just accessed my fourth online class, so I'm used to using Blackboard®."

This particular course required the use of a specialized database that was not familiar to the students, the Inter-University Consortium for Political and Social Research (ICPSR) database. The statistical software SPSS was a required tool for this course, and many students thought it was a library database because it was accessed through the university computer system. The course instructor taught the students how to use both of these resources.

The instructor had a strong history of working closely with librarians and normally referred students to the subject specialist librarian who supported this course in both its face-to-face and online formats in prior semesters. Some of the students had previous experience with the subject specialist librarian from other courses in this discipline and sought her assistance in this class. Student S3-1 commented that “[the subject specialist librarian] had a huge cornucopia of resources, uh, difference websites I never would have thought of.” When the embedded librarian for this course was not going to be available, he notified the students ahead of time and referred them to the subject specialist.

Case three - instructor perceptions. Research question one asked, “What is the instructor’s perception of how the embedded librarian works in an online class?” The researcher’s interview with the instructor provided data to respond to this question. Following an iterative coding process, several themes emerged from the interview data. See Appendix I for the coding scheme generated from the instructor interview. A description of the instructor’s perceptions of the value of the embedded librarian, challenges to the work of the embedded librarian, and future enhancements for the work of the embedded librarian follows.

Value of the embedded librarian. According to the instructor (In3), the embedded librarian worked with and *provided assistance to the students*. “He helped them through, at least some of them, through the kinds of problems that they have in locating information,” even though political science was not his area of expertise (In3). The embedded librarian helped students “get into [the literature] and dig around until you find what you have to find ” (In3). The embedded librarian “probably rose to the [the challenge] the most” when assisting students with the research paper’s literature review. Here “the demand was apparent from the students” (In3).

Challenges to the work of the embedded librarian. The instructor defined challenges to the work of the embedded librarian in two areas: planning and timing of the course. A little more up front contact and lead-time for integrated *planning* with the embedded librarian would have been helpful, however the constraints of the short summer term made that difficult. Acknowledging the less than ideal *timing of the course*, the instructor suggested that it might be a little easier to get the embedded librarian established in the course during the regular semester. He admitted this course was challenging for students to take in the compressed summer format. “The course requires a research paper that no matter how fast you work, it just takes time to absorb this material” (In3). With the exception of eliminating one module on a particular statistical technique, the course content was the same as that in the regular 14-week semester. Some time ago the instructor dropped an information literacy module from the course syllabus, and would like to reinstate it, but reports that “I don’t have room at the moment” (In3).

Future enhancements to the work of the embedded librarian. The data emerging from the interview with the instructor noted areas related to planning, role clarification, instruction and assignments, and types of courses to support as enhancements for the work of the embedded librarian. Case three instructor explained that due to the nature of this course, he “can’t quickly change its design a lot, because it’s got a very sort of rigid set of requirements and schedules and things” (In3). He would like the embedded librarian to be “more deeply embedded” which would require *planning* ahead of time. “I’d want to work closer with the embedded librarian in some course design issues and try to get that set up ahead of time” (In3).

Instructor In3 recommended *clarifying the role* and defining parameters for the embedded librarian’s responsibilities, such as limiting the number of resources the librarian could present. The instructor explained, the librarian “may be so-called embedded, but I’m sure this isn’t the only thing he does in his life. And so, how much time can I demand of his, of the embedded librarian?” (In3).

The instructor explained that “with an embedded librarian as a standard resource for the course,” he would work with the librarian to develop *instruction* on types of sources and bibliography guidelines for the literature review.(In3). He would create an *assignment* that required the students to consult with the embedded librarian about the bibliography.

While indicating he would “love to have a librarian that I would work with,” case three instructor asked, “Why online classes? I mean, what’s different between an online class and the need for a librarian in a regular class?” He asserted, the *type of course* to embed should not be determined by course format. “It’s just a matter of transmission

that's different, so why, you know, say this group needs an embedded librarian and that one doesn't?" He proposed that both online classes and traditional face-to-face classes would benefit from the support of a librarian assigned to the class.

Case three - student perceptions. Research question two asked, "What is the student's perception of how the embedded librarian works in an online class?" Student data was generated through interviews, an online survey, and postings on Blackboard®. Three themes emerged from the data: value of the embedded librarian, challenges to the work of the embedded librarian, and future enhancements for the work of the embedded librarian. The coding scheme developed from student data is illustrated in Appendix J. The data suggested students' perceptions of the value of the embedded librarian, challenges to the work of the embedded librarian, and future enhancements for the work of the embedded librarian are described below.

Value of the embedded librarian. Data analyzed from survey responses and interviews revealed several factors that contributed to student perceptions of the value of the embedded librarian: communication, librarian's availability, librarian's competence, assistance provided to students, and student learning.

Communication. Three of the interviewed students commented that the means and quality of the librarian's communication contributed to the value of the embedded librarian. Student S3-2 reported that the embedded librarian "responded to my e-mails." Student S3-4 contacted the librarian about three times, and "he's been extremely helpful." The librarian "responded to my e-mail extremely quickly, within, I think, 48 hours, which I appreciated" (S3-4). Student S3-3 said the embedded librarian "did send a couple of e-

mails, like, letting us know that [he] was there and letting us know ... how we can obtain information and the hours, [his] hours, the hours that [he] was available to help us.”

Librarian's availability. Student S3-3, in her first semester at the university, indicated that although she did not contact the embedded librarian, his availability was important. “It was comfortable knowing that if you get started somehow you have someone there who can respond to you and help you out. ... It really gave me, like, the strength, so I'm like, okay, so I can do it on my own, and if I get stuck, I would just ask them a question” (S3-3). This student continued, “Just knowing that you have a librarian and classroom professor and then our librarian, it's like, okay, I have two for the whole B.A. which would help me if I get stuck somehow” (S3-3).

Student S3-4 admitted, “I always feel kind of strange about contacting my professors about every little problem I encounter. So it was nice to have the [the librarian] to go to as well.” This student commented, “It's just helpful knowing that he was there because I could contact him whenever I want, considering the fact that this is a satellite course” (S3-4). One survey respondent wrote, “It is nice having someone there all the time if you need anything.”

One survey respondent indicated “having a ‘go-to’ made it easy and more readily available, but I think that if I had gone to the library and asked for help I would have been able to find the same information. However, not everyone is able to go to the library.” Several students cited physical distance from the campus as another reason that the embedded librarian's availability was a factor in his value.

Librarian's competence. Student S3-1 described the embedded librarian as a “good introductory guide ... a good general pathway researcher.” He elaborated saying,

“I think [the embedded librarian] is good for, um, just broad stroked questions like ... where would I find something on this in the library system, or do you maybe have an idea of how to search for this?” (S3-1). Student S3-3 remarked, “And who knows, [the librarian] might have even more knowledge than what your professor can help you with, for example, you can do the librarian research.” In the survey comments one student shared his appreciation for the librarian’s participation in Blackboard[®], “because they are knowledgeable and aware of the research we need to do to be successful in the course.”

Assistance provided to students. Data from student survey comments suggested that the assistance provided by the librarian to students contributed to the embedded librarian’s value. The types of assistance the librarian provided are outlined in Table 14.

Student S3-3 explained the importance of the embedded librarian’s assistance, saying, “The hard part is to like, being able to like, find the data you need to use. So in those cases, you need like, a librarian to tell you where you could find those data in our school website, like in the library website. ... It makes it easier having a librarian that’s going to help you and guide you through the right way where you can find the right information for your research.” Student S3-1 specifically mentioned that the embedded librarian clarified the parameters of the instructor’s assignment. “The first time I contacted him, [the embedded librarian} helped me out quite a bit” (S3-1).

Student S3-2 “used the [embedded librarian] pretty much to find out exactly how to, um, deal with, to find, documents within, um, pretty much within the library because I was kind of having trouble finding exactly what I needed to get.” Student S3-4 reported sending the librarian an e-mail message the first or second week of the course because she “couldn’t figure out how to use [a specialized database] and the [embedded librarian]

helped me through that.” This student also described the embedded librarian’s help with the literature reviews: “He put up an example for us to look at as guidelines” (S3-4).

One survey respondent wrote, “I asked [the embedded librarian] for assistance on several occasions, upon which he provided excellent assistance. It was nice knowing that he was available for the research portion of the course.”

The subject specialist librarian provided some assistance to the course. Student S3-1 had met the subject specialist librarian in a previous class “but I talked to her again and she, for this subject matter.” One survey respondent wrote, “I didn’t utilize the help from the [embedded] librarian only because I’ve learned a lot from [the subject specialist librarian] in the past. But for those who have not had a chance to meet [the subject specialist], I’m sure this resource was helpful.” Student S3-4 reported that when the embedded librarian was going on vacation he referred the students to the subject specialist librarian.

Student learning. Data emerging from the students indicated ways in which the embedded librarian affected student learning, an important factor in considering the value of the embedded librarian. The online survey asked if students thought having a librarian assigned to the class contributed to their success in the course. Four (40%) out of ten respondents replied “Yes,” two (20%) replied “No,” two (20%) answered “Not sure,” and two (20%) replied “Other” but offered no explanation. One student remarked in the survey comments, “I would not have been able to find the materials I did that were ESSENTIAL to my research question being formed and answered.” In replying to a question about the value of the librarian to success in this course, student S3-4 replied, “Considering the fact that I’m writing an 18-page research paper and it’s taken over

seven weeks and it's a lot of information I wasn't familiar with, I think it's extremely integral to the course."

When asked if they thought it was valuable to have the librarian participate in the Blackboard® course site, five (50%) out of ten survey respondents replied "Yes," one said "No," two (20%) answered "Not sure," and two (20%) responded "Other" but gave no explanation. Several students offered their comments on the value of the librarian participating in the Blackboard® course site. One survey respondent wrote, "Having someone outside of the course provide help was a good way to have another point of view on the topic." Another survey respondent wrote, "Without the participation, the students simply would not have known about the embedded librarian." One survey respondent explained, "Had he not participated, I think it may have been more difficult for him to target what areas we needed the most assistance on, such as how to produce a quality literature review." Another student responded that the participation of the librarian in the Blackboard® course site was value "because they are knowledgeable and aware of the research we need to do to be successful in the course." Student S3-4 reported, "I always open up whatever link he posts to class Blackboard®, and they've all been very helpful." This student continued, "Otherwise I would have been pretty lost." Table 15 displays student responses to the survey questions that asked if the librarian contributed to student success in the course and if the librarian's participation in Blackboard® was valuable.

Table 15

*Value of Embedded Librarian to Students in Case Three - Survey Responses**(N = 10)*

Librarian Contributed to Student's Success in Course		Librarian Participation in Blackboard® Course Site Valuable	
Yes	4	Yes	5
No	2	No	1
Not Sure	2	Not Sure	2
Other	2	Other	2

Challenges to the work of the embedded librarian. Data emerging from the student interviews and survey suggested challenges related to the librarian's competence and to the embedded librarian's overall lack of value to the class. Student S3-1 perceived the embedded librarian as less *competent* than the subject specialist librarian for this upper level undergraduate course. "For the more in-depth stuff, I, uh, wouldn't recommend him just because that's not really, I don't think that's his, his job, you know? Uh, [the subject specialist librarian], you know, her whole focus is that realm of research, so she knows everything."

Student S3-2 described the work of the embedded librarian as *minimally valuable*, reporting that "the value of an online librarian to my success was, um, I would say it was kind of minimal, honestly, because, like, the idea of an online librarian, I think, sounds great, but I kind of only use the online librarian to just, just for, like, things and such like finding specific, like, ways to use, like, the research databases. And the answers I was getting was [sic] kind of things that I think are kind of obvious. I'm sure I could have gotten those answers elsewhere as well." He continued, "And there are, I'm sure there are students that could use the online librarian more than I did, so, and it's probably helped other students a lot more than it helped me" (S3-2). One survey respondent wrote

that “deferring to the librarian with greater knowledge of the subject, [I] didn’t really utilize the [embedded] librarian too much.” Another survey comment was, “I did not feel the need to use [the embedded librarian].”

The student data highlighted other factors suggesting challenges in the course, however these factors were not directly related to the embedded librarian’s responsibilities. For example, student S3-2 reported that accessing virtual workspace on the university server to “get the SPSS program running on my computer kind of took a little time for me to get it because for some reason, like, it just wasn’t working on my computer, and I didn’t understand what was wrong, that apparently there are specific, um, web browsers that don’t really open it.” Similarly, student S3-4 discovered he/she was using the wrong browser to access SPSS. Access to and use of the SPSS application were beyond the scope of the embedded librarian’s responsibilities, however this delimiter was unknown to the students, and they may have attributed the problems to the librarian or expected the librarian to solve the problems. Student S3-4 mentioned the challenge of the course content, wishing she had taken the course on-campus because she had a lot of questions related to the course material that the librarian “couldn’t necessarily answer.” Again, this challenge was unrelated to the work of the embedded librarian.

Future enhancements to the work of the embedded librarian. Emerging from the student data, communication, librarian competence, assistance provided to students, supporting resources, formal library instruction, and types of course to support were factors to be considered in future enhancements of the work of the embedded librarian.

Student S3-4 suggested that the librarian regularly *communicate* with students, contacting them every week to reassure them that he’s there to answer our questions.

Librarian competence was a factor for future enhancement to the work of the embedded librarian. One survey respondent commented, “Make sure the embedded librarian has a least a research background in whatever subject he/she is embedded. Not a bachelor’s degree or anything but at least knowledge of good sites and resources.” Student S3-1 would not recommend an embedded librarian for the higher-level classes because it seems to be a general librarian., “a very broad-stroke position,” advising that, “if they’re going to be embedded, make sure they at least get a briefing or a concept of what they’re going to be needed for.”

Students S3-2 and S3-4 requested *assistance* in accessing and using SPSS. Although SPSS was not an application provided by the library, it was used in this research course and viewed by the students as a library resource. One survey respondent recommended improving library support to online learning with additional *supporting resources* such as “general links to sources that could be helpful” and video modules.

All four students interviewed possessed some library skills prior to this class, and nine (90%) of the ten survey respondents had received *formal library instruction* in previous courses. Even so, six (60%) of the ten survey respondents thought a format structured library instruction session would have been valuable to this class. Survey respondents offered the following comments: “For this specific research class an [sic] session would have been appreciated because most people are unfamiliar with how to look up a research topic and find valuable information suitable to their topic.” “I would have felt less overwhelmed with the entire research process, including several of the databases integral to the course, had there been a structured library instruction session.” “It may have cleared up confusion on how to access SPSS through the library database,

and also helped students to figure out how to gain specific research.” “Many times students don’t know how to conduct a search for info properly or at least not to their potential.” “There are many students that by the time they are in their junior or senior years, they don’t know how to conduct proper research. Having a library session would help a lot of students that might not ask for help but need it.” One survey respondent wrote, “I think that a structured library instruction course as well as links to available databases would have been helpful in this course and in other online courses.” Another survey comment specified that a structured library instruction session “would have been a good starting point, but I think I got the same information I would have received there by my reaching out to ask for help.”

In terms of *types of courses to support*, several students suggested the embedded librarian for other online courses. One survey respondent recommended that an embedded librarian should support other online courses in the same way he supported this course. Student S3-3 would “definitely” recommend including an embedded librarian in other online courses and said “the [embedded librarian] is really helpful because you that someone’s there and especially when you’re doing, like, an online course.” Student S3-2 recommended including an embedded librarian in other online courses because “I don’t feel it takes away from the course, and then, if anything, I think it adds to the course.” Student S3-1 thought an embedded librarian should be mandatory for online classes because online professors are so busy. Student S3-4 would “absolutely” recommend including an embedded librarian in other online courses. “I think if there’s a major research component to a course, I think it’s necessary, especially if it’s an online class” (S3-4).

Case three - librarian's perceptions. Research question number three asked, "What is the librarian's perception of how the embedded librarian works in an online class?" Librarian data was generated through an interview, the librarian's "Embedded Librarian Proposed Support Schedule," "Embedded Librarianship Journal," and "Embedded Librarian Question Statistics," and postings on the Blackboard® course management site. The librarian data was coded collectively across the four cases of this study. Appendix M illustrates the coding scheme for the data generated by the librarian across the four cases. The data that emerged led to three themes: the librarian's perceptions of the value of the embedded librarian; librarian's perceptions of the challenges to the work of the embedded librarian; and librarian's perceptions of enhancements to the work of the embedded librarian.

Value of the embedded librarian. Data in this case revealed that factors closely related the needs of the instructor and students, in particular elements such as communication, student characteristics, assistance to students, and supporting resources affected the embedded librarian's perception of his value.

In order to *communicate* with students who could not participate in the virtual office hours, the embedded librarian used the "Ask a Librarian" discussion to answer their questions. In addition, *student characteristics* affected the perceived value of the embedded librarian. The students in this course had prior library research experience. "Because they were upper level students in the major ... they didn't have as many issues" as students in some of the other classes (L3). For example, the librarian observed that these students did not have as many concerns about citations.

The embedded librarian discovered that the *assistance he needed to provide to students* in this course was minimal compared to any other course he supported in the study. The instructor had pre-selected many of the *supporting resources* for his students. As the librarian explained, “the professor and the text provided the majority of the data that would support their writing [and] their research projects, so there wasn’t as much need to go outside of those sources for support. And when they did, as I mentioned, they already had that relationship with [the subject specialist librarian], so that was something they knew just to turn to instinctively” (L3).

Challenges to the work of the embedded librarian. Data emerging from the librarian’s documents and interviews showed that challenges to the work of the embedded librarian clustered around communication and technology functionality. The librarian recognized that students might not be available to join the virtual office hours at the specified times. To ensure *communication* with students who could not participate in the virtual office hours, he promised to answer any questions the students posted on the “Ask a Librarian” discussion board (L3 - BB 6/11 & 6/21/13).

The *technology functionality* of Blackboard® chat was problematic. Anticipating difficulties, the embedded librarian asked students to inform him if they had technical trouble joining the virtual office hours so that he could help troubleshoot (L3 - BB6/11 & 6/21/13).

Enhancements to the work of the embedded librarian. The data generated by the librarian identified *technology functionality* as a factor to be enhanced for future work of the embedded librarian. Stemming from the challenges related to Blackboard® chat, the

embedded librarian declared that an improved chat tool for use in virtual office hours would enhance his work.

Case Four

Case four – course context. Case Four was based on a fully online course in the department of political science offered during a ten-week summer session. Course enrollment was open to upper level undergraduate and master's level students. According to the course catalog, this course examined “the structure, organization, objectives and activities of interest groups and their impact on public policy and campaign financing.” By the completion of the course students would be able to:

Describe and critically analyze various theories of interest group formation; describe the structure, organization, member recruitment, and strategies used by interest groups to advance their cause; explain how interest groups interact with and try to influence all branches and levels of government; recognize and think critically about the pros and cons of interest group activity in the electoral process; engage in a discussion of current political issues related to interest groups through a regular reading of a national newspaper, watching of television news, and other media sources; think critically about the role of interest groups in the national policy process; and write analytically about the impact interest groups have on the policy process by comparing two or more groups active in the same substantive policy area. (Course Syllabus, p. 2)

The Blackboard® course management system provided the technology platform for delivery of this course.

Aside from the first assignment in which students introduced themselves, all of the course assignments required the students to use library resources including streaming videos, electronic reserves, and specific websites related to the course content (In4). The course assignments culminated in a research paper, although formal information literacy instruction was not embedded in this course (In4).

Instructor and librarian. The instructor for this course had a doctoral degree and had taught this course in face-to-face and online formats numerous times. The embedded librarian was the institution's distance learning librarian, had never supported this course in the past, and did not have expertise in the discipline of the course. The instructor introduced the embedded librarian in the course syllabus and explained,

[the] course is participating in a research project in which a librarian will help students in a variety of ways. He will help you locate research materials, answer questions about citations, suggest structures for course assignments. No, he will not research or write your papers. [The librarian] is also planning to set up some real-time chats on Blackboard® once he knows when many of you are available. These chats will be optional, but what a perfect time to get some of your resource questions answered quickly. Note: he will have access through Blackboard® to all of your work. At the end of the course some of you may be asked to answer some questions about the experience. This research has been approved by the Towson University Institutional Review Board. (Course Syllabus, p. 1)

The instructor also included the embedded librarian's contact information in the syllabus.

In addition to the embedded librarian, the subject specialist librarian who had supported

this course over the past five or six years and developed web pages for the course, was available for the students to contact.

Students. Thirteen students completed this course, all undergraduates according to the instructor, even though the course was open to graduate students. The researcher interviewed four of the students. Four (31%) of the thirteen students completed the researcher's online survey. Because the survey responses were anonymous, it is not known if the interviewed students were those who responded to the survey.

This was the first fully online class for two (50%) of the four survey respondents. One of the four respondents had taken three or more online classes prior to this course. One student responded to the "other" to the survey question without specifying the number of previous online classes taken. When asked how many hybrid classes they had taken in the past five years, one student responded "four or more," one student responded "one," one student responded "none," and one student responded "other" without an explanation.

Two of the four survey respondents received instruction from a librarian on how to do library research as part of a prior course at the institution in this study. One respondent had never received library instruction in a prior course. One student responded "other" but did not elaborate.

The researcher asked the interviewees if they possessed the library research skills needed for this course. Student S4-4 explained "the research component of the course required us to research different articles and books for the various assignments ... and we were required to definitely use some articles and some journals through JSTOR, which is of course offered by the library, and I have had a past experience in using these resources."

Student S4-4 pointed out that he did not need to use any library tutorials because he “certainly used those documents in freshman year and sophomore year, but now that I am a senior, I do not need those anymore.” Another interviewee explained that they had to be “really familiar with how to look up information, um, in like legislation and, ah, information about interest groups, newspaper articles, and all of that stuff was, um, available in the library. ...I did know how to do that stuff before. ...I think with some other classes that I’ve taken at [the university] we had to go to the library and become familiar with how to research and um, look up things, and one of the librarians showed us where the newspapers are, ah, so yeah, I was familiar with that” (S4-3). Student S4-2 described his research background from prior courses in which librarians came to the class or the students met with the librarian in the library “to attend, like, a seminar. So I had a foundation, but this had been the first time in this context for me to do political science research.”

Communication. The instructor and embedded librarian met in person before the class started and discussed the role the librarian would play in the course. According to the instructor (In4), they e-mailed each other six or seven times during the ten-week session. The librarian (L4) cited a particular instance in which the instructor communicated with him via e-mail about some potential plagiarism questions, asking him to address the issues in a global response to the students. The embedded librarian described the “global responses feedback” he gave to students in case four via Blackboard[®] (L4).

The embedded librarian reported communicating with the students via e-mail. The instructor thought the students contacted the embedded librarian through e-mail, and

she knew they contacted the subject specialist directly via e-mail. One respondent to the student survey interacted with the embedded librarian in person.

The embedded librarian held seven virtual office hours for this class, sometimes combined with the virtual office hours for another political science class. The virtual office hours were held at the following times: 8:30 – 9:30 AM; 12:00 – 1:00 PM; 5:30 – 6:30 PM (twice); 7:00 – 8:00 PM; and 7:00 – 9:00 PM. One 7:00 – 8:00 PM session was held on a Sunday. According to the embedded librarian, none of the students utilized the virtual office hours (L4).

Assistance from the librarian. The embedded librarian analyzed the course syllabus and created a schedule that outlined when he would launch the “Ask a Librarian” discussion board tailored to the course, hold virtual office hours, and post relevant instructional materials. He introduced himself and his “Ask a Librarian” discussion board in a course announcement via Blackboard[®], explained the types of assistance he would provide, gave his telephone number and e-mail address, and invited the students to contact him anytime.

Students reported varying amounts of contact with the embedded librarian. Of the four students responding to the researcher’s survey, one student sought assistance from the embedded librarian two or three times, one sought assistance one time, one never sought assistance, and one student responded “other” without an explanation.

One of the four students interviewed sought assistance from the embedded librarian in locating “enough relevant information to write a 16-page paper.... He sent me links to different pages, like government websites where I could find legislation, and um, suggested some specific policy numbers that might be helpful, which was really good”

(S4-3). Another interviewed student did not seek direct assistance from the embedded librarian, but he did refer to the librarians' postings. This student commented, "Honestly, I really didn't use a librarian. Like sometimes ... the librarian would post on our Blackboard[®] site, like, links that if we had an assignment and we needed to go find information but it would be difficult for us to find it, they would post links making it easy to access those websites that we needed" (S4-1).

Two of the interviewed students sought assistance from the subject specialist librarian rather than from the embedded librarian. "Um, well [the embedded librarian], unfortunately I didn't have any chance to interact with, but I did have the chance to interact with [the subject specialist librarian]. I guess she was his coverage when he was on vacation" (S4-2). This student continued, "When doing research for this class, [the subject specialist librarian] was my primary aid. ... She was able to help me like, sift through, like, the information and give me, like, step by step" (S4-2). Another student responded "To be honest, none" when asked if he interacted with the embedded librarian. This student contacted the subject specialist librarian, asking for articles or books to use for his paper (S4-4).

The embedded librarian reported that two students bypassed Blackboard[®], sought his assistance directly, and asked a total of two questions via e-mail (Librarian Question Statistics). One question pertained to search help, and one question was related to Blackboard[®] communication technology. Neither of these e-mailed questions required referral to the instructor or to the subject specialist librarian.

Overall, data gathered from the interviews and survey showed that students sought assistance from the embedded librarian in constructing a search strategy; defining

a research topic; using the library's online catalog; using and searching in online databases; selecting journals to use; and using proper citation style. The survey respondents indicated they received the following assistance from the embedded librarian via the Blackboard® course site: links to subject guides designed to help find information about particular subjects; links to course gateways designed to help find information about a specific course; general information about library resources and services; link to the librarian's website; links to help guides designed to help use databases, citation style guides, or other library resources; link to the library website; and links to tutorials to help use the library and do research. The survey data also indicated that students received assistance from the embedded librarian through responses to questions posted by other students on the course Blackboard® site. A review of the Blackboard® postings, however, revealed that the only library-related question posted on the course Blackboard® site was about accessing electronic reserves from Blackboard®, and the instructor, not the librarian, provided the answer. Table 16 displays the types and frequency of assistance sought by the students and the assistance provided by the embedded librarian through Blackboard®, as reported by students responding to the survey in case four.

Table 16

*Embedded Librarian's Assistance to Students in Case Four – Survey Responses**(N=4)*

Assistance Sought by Students		Assistance Provided by Librarian via Blackboard®	
Type	Frequency	Type	Frequency
Constructing a search strategy	2	Links to subject guides to find information on particular subjects	3
Defining a research topic	1	Links to course gateways to find information about a specific course	3
Using library's online catalog	1	General information about library resources & services	2
Using & searching in online databases	1	Link to the librarian's website	2
Selecting journals to use	1	Links to help guides for using databases, citation style guides, or other library resources	2
Using proper style for citing sources	1	Links to tutorials to help use the library & do research	1
		Link to the library website	1
		Responses to questions posted by other students on Blackboard®	1

Library resources used by students. As reported in the interviews and survey responses, the students used a variety of library resources in this course including the library's online catalog; e-reserves; streaming videos; journals; JSTOR; Academic Search Premiere; tutorials; help guides; subject guides; and course gateways. Students described using the library's website "for, um, research, like researching books and articles and things" (S4-3); "journal websites for different subjects [where the] journals are broken down into specific categories [by subject area]" (S4-4); and "a lot of web links" (S4-1).

Case four - instructor perceptions. Research question one asked, "What is the instructor's perception of how the embedded librarian works in an online class?" The researcher interviewed the instructor to gather data to answer this question. The instructor's responses were reviewed multiple times and coded iteratively. Three themes emerged from analysis of the data: perceptions of the value of the embedded librarian; perceptions of the challenges to the work of the embedded librarian; and perceptions of future enhancements to the work of the embedded librarian. See Appendix K for the coding scheme of instructor's data. The instructor's perceptions of the value, challenges to, and future enhancements for the work of the embedded librarian are described below.

Value of the embedded librarian. According to the interview data, the instructor's perception of the value of the embedded librarian was based on three elements: librarian availability, assistance provided to students, and student learning. When interviewed, the instructor in case four voiced appreciation for the embedded librarian's availability. Instructor In4 reported, "I really like the idea of having the person there, and having them be a more, having a more active role than, um, than I think the [subject specialist librarian] was required to have" (In4).

The embedded librarian *provided students assistance* with identifying relevant websites, legal briefs, and other sources. The students “had to find a bill, a congressional bill, so we had some problems because one of the Thomas sites had sort of changed its configuration and [the embedded librarian] was able to um, email students and tell them, um, what the correct site was” (In4). Later in the course “some of the students, I believe, um, ended up contacting him about how to get these Amicus briefs” related to a Supreme Court brief (In4). The instructor in case four remarked, “Well, I think he improved, um, on assignment number four, on the congressional site. He was able to come up with, um, a better URL, um, or a URL that was easier for students to, um, utilize than others” (In4). Instructor In4 also mentioned that the embedded librarian helped the students find reliable sources for their research papers.

The instructor implied that she saw early evidence of the embedded librarian’s positive effect on *student learning*. “I’m reading the papers right now, so I think my perception is that it would be very valuable, and I think it might be even more valuable in the future, now that I see what [the embedded librarian] can do” (In4).

Challenges to the work of the embedded librarian. Based on the interview with the instructor, the data defined challenges to the work of the embedded librarian in the areas of communication and timing of the course. The instructor observed that the students did not *communicate* by posting questions “on the [Ask a Librarian] discussion board, which would have allowed for other students to see, or read what, um, was being asked and see if they needed assistance” (In4). The instructor acknowledged that the embedded librarian had some real time chats, although as an experienced online teacher, she was concerned about the use of synchronous *communication* in the online

environment. She warned the embedded librarian that real time chats had not worked well for her in the past, indicating that typically only a few students participated and were not particularly interactive. She pointed out that “the reason students take online is because they don’t have all ... their real time is, is, uh, taken up by work and that kind of thing.... and so the idea that you are going to get even half of your students participating in a real time discussion is not very realistic, I think” (In4).

The *timing of this online course* during the summer posed another challenge for the work of the embedded librarian. The instructor explained that preparing for an online class takes a great deal of pre-planning. “It has to be all thought through and done, from A to Z before you even begin the class, which makes it harder” for the compressed summer session. In addition, the time between the end of spring semester and start of summer session is limited, and extensive planning along with incorporating a new element, i.e., the embedded librarian, is difficult. In fact, “most people who are teaching summer school are teaching a course they’ve already taught” (In4). She advised that summer may not be an ideal time to try new approaches such as having the embedded librarian (In4).

Future enhancements to the work of the embedded librarian. The data identified communication, planning, assistance provided to students, instruction and assignments, instructional design, student learning, and assistance provided to instructor as elements to consider in future enhancements for the work of the embedded librarian. The instructor emphasized the need for early *planning*. The embedded librarian to “get to us early enough, because, you know with online, we are like pushing the syllabus out like a month before the class starts” (In4). She pointed out that, based on her experience, the

students prefer *communication* through direct e-mail contact with faculty, however “[the students] don’t initiate. So ... maybe ... the embedded librarian might need to be more proactive [in communicating] instead of waiting for the students to come to them” (In4).

Regarding the embedded *librarian’s assistance to students*, the instructor expected “the students would be asking the embedded librarian more about, um, more questions about the um, reliability and validity of the sources that they were using.” She proposed that the embedded librarian explain how to determine the perspectives and biases of websites (In4).

Instructor In4 thought the librarian could meet with the instructors ahead of time to offer options for *instruction and assignments*. The embedded librarian could suggest, “five things that I can offer you, you know, are any of these of interest to you or do you have something that you want me to do?” Using that conversation as a foundation, the faculty member and librarian could modify and determine what instructional activities would be most effective for a specific online course (In4). “Yeah, if they had like a menu of five things that they could offer, it might make it easier for those of us teaching online to say oh, yeah, I could plug that right in” (In4). In addition, this instructor would structure some of the instruction and web assignments around the embedded librarian. She added, “It might be interesting to see what the embedded librarians do for other professors in other disciplines, and actually in other colleges” (In4). She suggested constructing an *assignment* requiring the students to properly cite two or three online sources such as agency and interest groups websites and YouTube videos – “an exercise in which you have something that isn’t easily ... that’s difficult to cite.... And also, um, um, use of quotations” (In4).

In relation to *instructional design*, the instructor thought it would be interesting to have “the embedded librarian actually doing a, um, a media capture, you know, of like talking to them, would be very useful. . . . Like if you got to see the librarian in action, I think that might be very, um, personal” (In4). The instructor emphasized her desire to see evidence of *student learning* in the final paper, specifically that the students transferred and applied what they learned about doing library research (In4).

Asked if she would recommend including an embedded librarian in online courses to her colleagues, the instructor responded, “Yeah, I would” and explained that the faculty in her department have always used the subject specialist librarian “who has been very proactive, so in a way it’s semi-embedded” (In4). Instructor In4 also recognized the value of the particular *assistance the embedded librarian could provide to faculty*. “In an online class, [the embedded librarian] could be very useful. . . . Especially for new colleagues teaching online, not knowing how do [sic] you do a library session when you don’t have, when you can’t take your students to the library” (In4).

Case four - student perceptions. Research question two asked, “What is the student’s perception of how the embedded librarian works in an online class?” Data to answer this question was generated through interviews, an online survey, and postings on Blackboard®. The data collected was reviewed and coded iteratively and the coding scheme is presented in Appendix L. Through analyzing the data, the researcher identified three themes: 1) value of the embedded librarian; 2) challenges to the work of the embedded librarian; and 3) future enhancements for the work of the embedded librarian. Student perceptions of these themes are described below.

Value of the embedded librarian. Data emerging from student interviews and survey responses in this case suggested that communication, librarian availability, assistance provided to students, and minimal value were factors contributing to student perceptions of the value of the embedded librarian.

Communication. Two of the interviewed students indicated their perceptions of the embedded librarian's communication were positive. Student S4-1 worked full time and did not have time to travel to the library. She valued the online access for communicating with the librarian. "That easy access, to be able to talk over the Internet and chat, is good. You don't have to get in the car or take the bus or however you travel and go to the school and try and find somebody. I just thought it was pretty helpful" (S4-1). She also reported "they stayed in contact with us. The teachers stayed in contact with us so throughout the course I was very much informed. I knew for the most part, what was going on. If I was worried about finding something, some way or another, one of them, either the teacher or the librarian, would e-mail us and then I would know what was going on" (S4-1). Another interviewee remarked that [the embedded librarian] "e-mailed the class almost every week, and he was available for online consultations via Skype or via e-mail" (S4-4).

Librarian availability. Three of the four interviewed students commented on the availability of the embedded librarian. He "was always very helpful. ... I really, you know, saw his presence in the class" (S4-4). Student S4-3 said, "He made it very clear that he was always available, which was really nice to know just in case, you know, I got stuck or needed some extra help. ... I did really like knowing that he was there to help us." One of the interviewed students commented on the ease of communicating with the

librarian. “For convenience, it’s right there. It comes right to my phone. I can just click on my links, or I can just click and quickly email them back and forth, and they’re right there for anything that you would need” (S4-1). One survey respondent commented on the value of the librarian’s availability in the Blackboard® course site, “Sometimes people have questions and cannot find the time to visit the library.”

Assistance provided to students. Students were asked in the interviews and the online survey about the assistance the librarian provided. The types of assistance the librarian provided are described in the Course Context section of case four, and survey responses specifying assistance provided by the librarian are illustrated in Table 16.

All four interviewed students commented that the embedded librarian assisted them in this course, even if they did not personally interact with him. Three on the interviewed students indicated they benefitted from the embedded librarian’s postings even if they did not seek his assistance. Student S4-1 explained that the librarian provided assistance by posting links on Blackboard® to helpful websites for their assignments. This student continued, “I think [the embedded librarian] is a good idea. ... I didn’t take full advantage of the librarian being in the course ... but there were a lot of times where I was stressed out. ... The one web page was shut down or they were working on it, so it's like, ‘Oh my God, I don’t know how I'm going to find this information,’ and then [the librarian] sent us a link, ‘Hey, go to ... these other places where you can go find information that you need.’ I was like, ‘Yes!’” (S4-1).

Another interviewed student described the assistance the librarian provided in “finding enough relevant information to write a 16-page paper.. ... He sent me links to different pages, like government websites where I could find legislation, and um

suggested some specific policy numbers that might be helpful, which was really good” (S4-3). Student S4-2 reported using links that were posted on Blackboard® and said that “we were shown how to evaluate [interest group] websites, but also to follow links that will lead to their supporters, and like where they stand on policy bills and, how to I guess research like editorials on their stand, I guess, on policy issues.”

One interviewee reported, “I really did not need [the embedded librarian’s] assistance, but I was very impressed by his initiative to offer his help to anybody who was in the need of it” (S4-4).

Comments from survey respondents about the embedded librarian’s assistance were similar to the remarks of the interviewees. One survey respondent thought the librarian’s assistance contributed to his/her success and said, “The librarian gave me helpful links and ways to use proper formatting.” One student regretted not consulting the librarian more, writing, “I did not use the librarian as much as I would have liked to. It would have benefitted me more if I had of, considering I am not too familiar with APA.” Another survey respondent appreciated the fact that “The librarian sent emails and links to assist with assignments. The links were very helpful with finding information.”

The online survey specifically asked students if having a librarian assigned to the class contributed to their success in the course. Of the four students who responded to the survey, two (50%) thought having a librarian assigned to the class contributed to their success in the course; one (25%) student responded “no;” and one (25%) student responded “other” but did not provide a comment. When asked if it was valuable to have the librarian participate in the Blackboard® course site, two (50%) of the four students

replied “Yes;” one (25%) replied “No;” and one (25%) responded “Other” but did not give an explanation. Table 17 illustrates the responses to these survey questions.

Table 17

Value of the Embedded Librarian to Students in Case Four - Survey Responses

(N = 4)

Librarian Contributed to Student’s Success in Course		Librarian Participation in Blackboard® Course Site Valuable	
Yes	2	Yes	2
No	1	No	1
Not Sure	0	Not Sure	0
Other	1	Other	1

Challenges to the work of the embedded librarian. Communication, role clarification, schedules of students and librarian, student characteristics, assistance provided to students, and minimal value emerged from the data as elements contributing to student perceptions of challenges to the work of the embedded librarian.

When asked about the value of the embedded librarian’s participation in the Blackboard® site, one survey respondent questioned the *communication* of the librarian. “I did not know the librarian participated in the Blackboard® course site. I seen [sic] a discussion thread, but to my knowledge it was blank and s/he never participated in the active discussion boards. Student S4-2 indicated he was not clear about the *role of the embedded librarian*. “I was not sure how to use the research librarian in conjunction with this course, so it was under utilized” (S4-2).

Student and librarian schedules created challenges in this course according to two students. Student S4-1 admitted, “It would have benefited me to have asked the librarian about APA, but I work fulltime, and I just really didn’t have the time to do all that, so it wasn’t anything on their part. That was procrastination on my part.” Student S4-2

indicated he did not interact with the librarian due to schedule problems, citing “timing conflicts with [the embedded librarian’s] I guess, prearranged vacation,” and his own travels – an out-of-state internship and a two-week period when he was out of the country. “So, being able to access the library during typical hours wasn’t always an option for me. And I wasn’t sure if I sent like, a question like at 3 am, like how would it be responded to or ... like I guess the hours there where they were available were not clear” (S4-2).

Student’s characteristics, specifically comfort with using technology, challenged the ability of student S4-2 to utilize the embedded librarian. He reported being interested in using the instant messaging and text-a-librarian features provided by the librarian, “but I wasn’t sure about and it was, I guess it was, I guess I was just too busy to take the time to like research how to use them. I feel like there wasn’t like pre-gear instructions” (S4-2).

One survey respondent commented about the *assistance provided* by the embedded librarian, “The research librarian didn’t take a proactive stance in offering their [sic] help.” Three student responses indicated that the embedded librarian was of *minimal value* in this course. Student S4-3 explained that, although she appreciated his availability, she did not need his assistance because this was an upper level course and she already had sufficient library research skills. “For me personally, I didn’t use him very much. ...I mean, I did really like knowing that he was there to help us, um, but at our level, I mean, at a 400-level class, you know, writing a paper isn’t something that we should need to ask a lot of questions about, so I don’t know. I ... um, it was fine. It was nice to have him, but I don’t think it was entirely necessary. ... I feel like just having him like on call would be good, but I feel like I can always call the library and ask for help

from a librarian, so I don't know if it was worth his time" (S4-3). When asked about his perception of the embedded librarian's value to his success in this course, another student said, "well, for this course not so much. ... I'm a senior now, so I only need the information that they can't provide. From time to time, you know, I will email [the subject specialist librarian]" (S4-4). One survey respondent wrote, I was able to get the info I needed through actually going to the library and emailing the teacher."

Future enhancements to the work of the embedded librarian. Data that emerged from student interviews and survey responses revealed role clarification, assistance provided to students, formal library instruction, and types of courses to support as elements contributing to student perceptions of future enhancements to the work of the embedded librarian.

Clarification of the role of the embedded librarian emerged from the student data as a factor important to future enhancements. One student response to a survey question about the need for a formal library instruction indicated lack of understanding the role of the embedded librarian. "If I had known how the librarian could of specifically helped me with daily assignments, readings, and research, I would have utilized it more. It was like a ghost presence. They were there but I was not sure why." Another response to the survey question about the need for a formal library instruction session was, "I think many students did not know what specific services or role that the librarian played in this class. This probably sounds silly but what exactly does a librarian do? I wished they had taken a more proactive stance in classroom projects." Both comments indicate a need to clarify the role of the embedded librarian in the future.

One of the interviewed students recommended that, in the future, the embedded librarian should provide more research *assistance* targeted to the individual student. “For example, they know the course material we’re researching in, we’re working on, and since we were a small class, maybe if they reached out to us on an individual level. So I guess ideally, uh, the librarian would be like ... ‘seeing as I came across this uh article [on your topic] that I thought may be valuable to you, or I came across this website maybe you could use’ or, I don’t know. Maybe just check in and ask ‘how’s your research going’” (S4-2).

The survey asked students if they thought a *formal structured library instruction session* would have been valuable in this class. One (25%) of the four students responded “Yes,” one (25%) responded “Not sure,” and two (50%) students responded “Other” but did not add comments. Three of the interviewed students reported prior experience doing library research. One student explained, “I had had research, I guess, background. In other classes we would have librarians come to the class or sometimes the teacher would arrange for all students to [meet with] the librarian to attend like a seminar” (S4-2). Student S4-3 said, “I think with some other classes that I’ve taken [here] we had to go to the library and become familiar with how to research and um, look up things, and one of the librarians showed us where the newspapers are.” Student S4-4 explained, “I have had a past experience in using [research] resources, so I was accustomed with JSTOR and financial study.” These interview comments relate to survey responses about the need for formal library instruction in the online courses. Students may consider a formal library instruction session unnecessary if they have had prior library instruction and experience with library research.

Data generated by student interviews suggested the *types of courses* the embedded librarian should support in the future. Student S4-4 acknowledged, “I think that the librarians serve a very, very strong purpose, and I think that when we think about where we place them, you know, it is very important to think about who is in the class.” He suggested that lower level courses would be more appropriate for the embedded librarian than upper level courses. “In terms of you know, freshmen and sophomore versus seniors, the course work and the course load is also very important to keep in mind and how much the students will need the library to use for the assignments. Because you know, these are important factors to keep in mind when deciding on which courses should merit a librarian” (S4-4). This student proposed, “To be perfectly honest, I think that they will be more useful in the classes that are freshmen and sophomore because at [that] point, they are a great resource. But at this point I am a senior now so I only need the information that they can’t provide” (S4-4).

Another interviewed student agreed with placing the embedded librarian in lower level courses. “Maybe um, an embedded librarian would be more appropriate at the 100 level, um, so that, you know, you're learning how to write the first year you get into college, if you don't already know how. And so then it's not necessary at the 400 level” (S4-3). She continued, “But other than that, I feel like we college students should know how to use the library, and so I don't know if it is worth it” (S4-3).

When asked if they would recommend including an embedded librarian in other online courses, two students specified courses with assignments that required significant library research. Student S4-4 responded, “Absolutely. Yes. I would, I would” recommend having an embedded librarian in other online courses, and he referred in

particular to a political science research course. “I think that, in that particular class, having a librarian would be very, very helpful because of the fact that the course was so intense with information, you know, and there is just so much articles that you have to find for the course. That resource [the embedded librarian] was not really available to us, and I think that a course that is so intense with information could use a librarian” (S4-4). Another interviewee agreed, referring to the same course. “An embedded librarian would be really helpful in classes that are specific to research. Like, I would have really liked to have him in my political research class” (S4-3).

Two interviewees alluded to the location of the library as a factor in determining which courses should have an embedded librarian. Student S4-1 pointed out the convenience of having an embedded librarian for online courses. “They’re right there for anything that you need, and you don’t have to get in the car or take the bus or however you travel and go to the school and try to find somebody.” Student S4-2 admitted, “If I was, I guess, convenient to the campus, I would probably just prefer to come on campus and ask the library [sic] there.”

Case four - librarian perceptions. Research question number three asked, “What is the librarian’s perception of how the embedded librarian works in an online class?” To explore this question, data was gathered through an interview with the librarian, postings on the Blackboard® course management site, and documents generated by the librarian as “Embedded Librarian Proposed Support Schedule” (LSS), “Embedded Librarianship Journal” (LJ), and “Embedded Librarian Question Statistics” (LQS). Data generated by the librarian was coded collectively across all four cases, and the coding scheme is illustrated in Appendix M. Data specific to case four revealed factors related

to the librarian's perception of challenges to the work of the embedded librarian. In contrast to case four data from the instructor and students, the data emerging from the librarian's interviews and documents did not include elements related to value of or future enhancements to the work of embedded librarian.

Challenges to the work of the embedded librarian. Data from the librarian's interviews and documents showed that communication and role clarification may have contributed challenges to his work in this course. According to the Blackboard® discussion tracking and the embedded librarian's question statistics (LQS), none of the students *communicated* with the embedded librarian via the "Ask a Librarian." The embedded librarian voiced concerns related to *role clarification*. He worried that the students might become confused when the subject specialist librarian took over for him during his vacation (L4).

Cross Case Analysis

The purpose of the cross case analysis was to identify common and unique perceptions about the work of the embedded librarian as described by the instructors, students, and librarian across the four cases in this study. In addition, the cross case analysis examined data derived from descriptive statistics collected through student surveys.

Cross case analysis - instructor perceptions. Elements contributing to the instructors' perceptions of the value of, challenges to, and enhancements for the work of the embedded librarian were examined across the four cases in this research. Assistance provided to students, librarian competence, communication, librarian availability, and student learning emerged as common features across cases and related to instructors'

perceptions of the value of the embedded librarian. Instructors in three cases perceived the assistance the embedded librarian provided to students as valuable, for example in locating full text articles (Case One), using APA citation style (Case Two), and conducting literature reviews (Case Three). Librarian competence emerged as an element contributing to the value of the role of the embedded librarian. Specifically, Case One instructor cited the expertise of the librarian, and Case Two instructor explained the librarian had more skills and knowledge than the instructor. Style and quality of the librarian's communication contributed to instructors' perceptions of the value of the librarian, for example through his friendly and inviting style (Case One) and his ability to clear up misunderstandings (Case Two). Two instructors referred to the librarian's availability as an element contributing to value of the embedded librarian. According to the instructors, the embedded librarian was "right there" (Case One) and was specifically assigned to the class (Case Four). Instructors cited the librarian's contribution to student learning as valuable, referring to improvements in student work (Case Two) and the quality of student work (Case Four).

Three elements contributing to the instructor perceptions of the value of the embedded librarian emerged in single cases: student characteristics, assistance provided to instructor, and types of courses to support. For example, the instructor in Case Two perceived that student characteristics, i.e., students' lack of preparation to conduct library research, highlighted the importance and value of the embedded librarian. The librarian's assistance to the instructor in the form of added knowledge and skills was perceived as valuable by Case Two instructor. In considering types of courses to support,

Case Two instructor indicated that the embedded librarian was ideal for the online course format.

Three characteristics emerging from instructor data and common across cases contributed to challenges to the work of the embedded librarian. These commonalities were timing of course, planning, and student characteristics. Instructor data revealed that timing of the online courses in the case studies contributed to the challenges of the work of the embedded librarian in Case Two (the short summer session), Case Three (no room for information literacy module in short session), and Case Four (difficult to add new element, such as the embedded librarian, in the summer). In two cases, planning affected instructors' perceptions of challenges to the work of the embedded librarian. For example, Case Two instructor reported that insufficient planning time made it difficult to collaborate with the librarian in course set up. The instructor in Case Three explained that the limited lead time for planning in summer session challenged the work of the embedded librarian. Student characteristics emerged as contributing to the challenges of the embedded librarian's work in two cases. Case One instructor cited the students' lack of library research skills and Case Two instructor pointed to the students' varying academic disciplines and backgrounds as elements related to challenges to the embedded librarian's work.

Communication, role clarification, student anonymity, and technology functionality were revealed in single cases as features contributing to the challenges of the work of the embedded librarian. Case Four instructor explained that the real time chat was an inconvenient communication vehicle for students. Role clarification, specifically the role to designate librarian in Blackboard® emerged as a challenge

according to Case Two instructor. Case Two instructor was the only instructor who mentioned student anonymity as a challenge, specifically, keeping student information confidential in discussions with the librarian. Only Case One instructor raised concerns about technology functionality and cited problems with Blackboard® functionality as challenging the work of the embedded librarian.

Several common elements pertaining to future enhancements for the work of the embedded librarian emerged from the instructor data across multiple cases in the study, namely instruction and assignments, planning, assistance provided to students, types of courses to support, communication, and role clarification. In the area of instruction and assignments, Case One instructor proposed that the embedded librarian host assignments related to information literacy skills. The instructor for Case Three suggested that the librarian be involved with the course design. Case Four instructor recommended that assignments be created around the work of the embedded librarian in the course. Three instructors suggested future enhancements in the area of planning. Case Two instructor suggested that better planning would result in better integration of the embedded librarian in the course. Case Three instructor indicated that establishing collaboration earlier in the planning process would enhance the work of the embedded librarian. Case Four instructor echoed both recommendations and encouraged earlier planning. Instructors in Case Two and Case Four made suggestions for enhanced assistance to students. The instructor in Case Two cited a need for greater focus on plagiarism in that course. Case Four instructor indicated that the work of the librarian would be enhanced by providing more in depth assistance in determining reliability, validity, perspectives, and biases of sources. Data emerging from interviews with three instructors related to the types of

courses an embedded librarian should support. Case One instructor recommended, for example, that courses with a research methods component should be assigned an embedded librarian. Instructor in Case Two specified that embedded librarians should support doctoral level courses. Case Three instructor recommended both online and face-to-face courses for future implementations of the embedded librarian program.

Communication was cited as an element to consider in future enhancements of the work of the embedded librarian. For example, in Case Two the instructor indicated the need to be more proactive in contacting librarian and in Case Four the instructor suggested that the librarian could be more proactive in communicating with students. Role clarification emerged from two instructor interviews as enhancement areas. Case Two instructor recommended that the role of the librarian in the course be clarified early. Case Three instructor cited the importance of defining the parameters of librarian's responsibilities and time commitment to the course.

Enhancement items perceived by instructors that were unique to a single case were instructional design, assistance provided to instructor, supporting resources, and timing of course. Case Four instructor suggested enhancing the embedded librarian's instruction by utilizing media capture or a similar technology. The instructor in Case Four also suggested that the embedded librarian assistance to instructors new to online teaching would be an enhancement to the program. In terms of supporting resources, Case One instructor recommended that the embedded librarian create more customized resource guides. Case One instructor also suggested that improvements in the course management system and interactive technologies would enhance the work of the embedded librarian. Case Two instructor, citing the timing of the course, recommended

that providing the service in a regular semester rather than in the short summer session would enhance the work of the embedded librarian. Table 18 illustrates the commonalities and uniqueness of instructor perceptions of the work of the embedded librarian across the four cases.

Table 18

Commonalities and Uniqueness of Instructor Perceptions Across Four Cases

	Value	Challenges	Future Enhancements
Commonalities Across Multiple Cases	Assistance provided to students <i>Cases 1, 2, 3,</i> Communication <i>Cases 1, 2</i> Librarian availability <i>Cases 1, 4</i> Librarian competence <i>Cases 1, 2</i> Student learning <i>Cases 2, 4</i> Assistance provided to instructor <i>Cases 1, 2</i>	Timing of course <i>Cases 2, 3, 4</i> Planning <i>Cases 2, 3</i> Student characteristics <i>Cases 1, 2</i>	Planning <i>Cases 2, 3, 4</i> Instruction & assignments <i>Cases 1, 3, 4</i> Types of courses to support <i>Cases 1, 2, 3</i> Communication <i>Cases 2, 4</i> Role clarification <i>Cases 2, 3</i> Assistance provided to students <i>Cases 2, 4</i> Assistance provided to instructor <i>Cases 1, 4</i>
Unique to a Single Case	Student characteristics <i>Case 2</i> Types of courses to support	Communication <i>Case 4</i> Role clarification <i>Case 2</i>	Timing of course <i>Case 2</i> Supporting resources <i>Case 1</i>

	<i>Case 2</i>	Student anonymity <i>Case 2</i> Technology functionality <i>Case 1</i>	Instructional design <i>Case 4</i> Student anonymity <i>Case 2</i> Student learning <i>Case 4</i> Technology functionality <i>Case 1</i>
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Cross case analysis - student perceptions. Students' perceptions of the value of, challenges to, and enhancements for the work of the embedded librarian were examined across the four cases in this research. Some of the elements emerging from the student data were common across multiple cases, and some were unique to a single case. Examples from the data illustrate the student's perceptions.

Data emerging from student interviews and survey responses revealed several elements common to two or more cases related to students' perceptions of the value of the embedded librarian: assistance provided to students, communication, librarian availability, student learning, and student characteristics. Students in all four cases gave examples of ways in which the librarian's assistance was valuable. A video tutorial and instructions on how to access materials from other libraries via interlibrary loan were examples of assistance provided to and valued by students in Case One. Students in Case Two valued the librarian's assistance with APA citations. Student comments in Case Three mentioned the embedded librarian's helpful responses to questions. The links to related assignments contributed to student perceptions of the value of the embedded librarian in Case Four.

Aspects of communication contributed to the value of the embedded librarian according to students in the four cases. Case One students, for example, appreciated the updates and reminders sent by the librarian. Students in Case Two were pleased that the librarian specified the times he would be available, including late night hours. Students in Case Three mentioned the librarian's quick responses to e-mail as helpful, and students in Case Four valued the librarian's initiative in communicating with them and offering help.

Students in all four cases indicated that the librarian's availability contributed to their perception of his value. Even if they did not need to contact him for help, students valued his presence. For example, a student in Case One was happy that "he was there." In Case Two, students were pleased they could contact the librarian in lieu of the instructor. A student in Case Three cited the value of having a "go to" person. Case Four students indicated the easy access to and presence of the librarian as positive.

Data from students revealed their perceptions that the embedded librarian contributed to their learning. A student in Case One remarked that the embedded librarian contributed to success in the course. A student in Case Two would not have "done as effectively" without the librarian, and a student in Case Three said, "I would have been lost" without the embedded librarian. In terms of student characteristics, students in Case One and Case Two perceived the embedded librarian's work as valuable, particularly for those students who lacked prior library research skills.

Elements unique to single cases and related to the students' perceived value of the embedded librarian were librarian competence, timing of course, and types of courses to support. Librarian competence contributed to the value of the librarian's work. For

example, a student in Case Three commented that the librarian would be a good “general introductory guide” to library research for undergraduate students. One student in Case Two perceived the embedded librarian as a good addition to the short summer session. Also in Case Two, a student viewed the research based course as a valuable type of course for the embedded librarian to support.

Students’ perceptions of challenges to the work of the embedded librarian emerged from data across the four cases and highlighted five common issues: student characteristics, minimal value, communication, assistance to students, and schedules of students and librarian. Student characteristics, an element contributing to the value of the embedded librarian, also played a role in challenges to the embedded librarian’s work. For example, a student in Case One mentioned that students from the “older generation without technology experience” may create challenges for the librarian. In Case Two a student reported, “a lot of us forgot how to research,” potentially presenting a challenge for the librarian. A Case Four student admitted unfamiliarity with technology used in class, which may have contributed to the challenges of the embedded librarian’s work.

Some students indicated that the embedded librarian was of minimal value to them. For example, a student in Case One reported not needing the librarian. A student in Case Three preferred to seek assistance from the subject specialist librarian. In Case Four, a student who already had library research skills described the embedded librarian as minimally valuable. Communication, cited as valuable aspect of the work of the embedded librarian, was also described as a challenge. A student in Case Two indicated that at times responses from the librarian took too long. In Case Four a student reported not seeing the librarian’s participation in Blackboard®.

In two of the cases students described challenges related to the assistance the librarian provided. A student in Case Two explained the difficulties in accessing electronic journals not owned by the institution and implied that the need for that assistance created a challenge for the librarian. As another example, a student in Case Four criticized the librarian for not being proactive enough in offering assistance. Schedules of students and the librarian also created challenges for the work of the embedded librarian. Students in Case Two reported that the librarian's virtual office hours conflicted with their class schedules. Student work schedules and the librarian's vacation were cited as challenges by students in Case Four.

Three unique elements emerged from the student data as contributing to challenges to the work of the embedded librarian: librarian availability, role clarification, and technology functionality. In Case Two the librarian was not available at the beginning of the course, impeding the assistance available to students who had assignments due the first week or class. In Case Four the librarian's role needed to be clarified so that students would better understand how to use the librarian. Technology functionality challenged the work of the librarian in Case Two when students were unable to use the chat tool.

Contributing to students' perceptions of future enhancements for the work of the embedded librarian, common data categories across multiple cases included types of courses to support, formal library instruction, assistance provided to students, communication, and role clarification. Students in the four cases recommended several issues to consider when determining the types of courses an embedded librarian should support. For example, in Case One, students suggested assigning an embedded librarian

to higher level, content specific courses. A student in Case Two encouraged considering financial resources, such a funding for staff, when choosing which courses to support with an embedded librarian. A student in Case Three thought the embedded librarian should be a mandatory presence for all online courses. Students in Case Four identified both lower level courses and research courses as those to be supported by an embedded librarian in the future.

When asked if formal library instruction would be a future enhancement for the work of the embedded librarian, students in Case One and Case Two responded yes, recommending that formal library instruction be included in those online courses. A student in Case Three remarked that many juniors and seniors “don’t know how to conduct proper research” and would benefit from a formal library instruction session led by the embedded librarian. In Case Four a student advised that the need for a formal library instruction session in future implementations of the embedded librarian would depend on the students’ prior library research experiences.

Students recommended several enhancements for the assistance provided by the embedded librarian. For example, a student in Case Two suggested that the embedded librarian provide instructions for accessing university system storage drive. Students in Case Three were required to use SPSS and recommended that in the future the embedded librarian could provide instructions in how to access and use SPSS. In Case Four a student thought the embedded librarian could provide more assistance targeted to individual student topics.

Students in multiple cases mentioned communication and role clarification as areas in which the future work of the embedded librarian could be enhanced. Consistent

response time within 24 hours emerged from Case Two as a future enhancement, and weekly contact with students was suggested in Case Three. A Case Two student requested clarification of the librarian's role, specifically asking what librarians do other than helping with APA citations. A student in Case Four requested clarification of the assistance librarian would provide.

Unique to a single case, the following elements emerged from student data for consideration in future enhancements: librarian availability, librarian competence, schedules of students and librarian, and supporting resources. To overcome one of the challenges, a student in Case Two recommended that the librarian be available to assist the students on the first day of class. A student in Case Three proposed that librarian competence would be enhanced if the librarian had research background in the course being supported. According to a student in Case Two, the librarian needs to be aware of and avoid conflicts with students' class schedules. A Case Three student suggested greater use of video modules as supporting resources in the future.

Common and unique issues that contributed to students' perceptions of the value of, challenges to, and enhancements for the work of the embedded librarian across all four cases are presented in Table 19.

Table 19

Commonalities and Uniqueness of Student Perceptions Across Four Cases

	Value	Challenges	Future Enhancements
Commonalities Across Multiple Cases	Communication <i>Cases 1, 2, 3, 4</i>	Student characteristics <i>Cases 1, 2, 4</i>	Formal library instruction <i>Cases 1, 2, 3, 4</i>
	Librarian availability <i>Cases 1, 2, 3, 4</i>	Minimal value <i>Cases 1, 3, 4</i>	Types of courses to support

	Assistance provided to students <i>Cases 1, 2, 3, 4</i> Student learning <i>Cases 1, 2, 3</i> Student characteristics <i>Cases 1, 2</i>	Communication <i>Cases 2, 4</i> Schedules of students and librarian <i>Cases 2, 4</i> Assistance to provided to students <i>Cases 2, 4</i>	<i>Cases 1, 2, 3, 4</i> Assistance provided to students <i>Cases 2, 3, 4</i> Communication <i>Cases 2, 3</i> Role clarification <i>Cases 2, 4</i>
Unique to a Single Case	Timing of course <i>Case 2</i> Librarian competence <i>Case 3</i> Types of courses to support <i>Case 2</i>	Role clarification <i>Case 4</i> Librarian availability <i>Case 2</i> Librarian competence <i>Case 3</i> Technology functionality <i>Case 2</i>	Schedules of students and librarian <i>Case 2</i> Librarian availability <i>Case 2</i> Librarian competence <i>Case 3</i> Supporting resources <i>Case 3</i>

Cross case analysis – assistance provided to students. In every case, the students interviewed described the array of assistance provided to them by the embedded librarian such as links to websites, assistance in finding resources, help using databases, and citation tips. Student survey results also reflected the assistance provided by the librarian, confirming the interview data. Table 20 illustrates the embedded librarian's assistance to students as reported by survey respondents across the four cases.

Table 20

*Assistance of Embedded Librarian Across Four Cases - Survey Responses**(N = 32)*

Assistance Sought by Students		Assistance Provided by librarian via Blackboard®	
Type	Frequency	Type	Frequency
Constructing a search strategy	8	General information about library resources & services	15
Using & searching in online databases	6	Links to tutorials about using library & doing research	11
Defining a research topic	5	Link to library website	8
Using library's online catalog	5	Responses to questions posted by other students on Blackboard®	7
Selecting journals to use	5	Links to course gateways for finding information about a specific course	7
Remote access to online databases	5	Links to help guides for using databases, citation styles, or other library resources	6
Using proper citation style	5	Link to librarian's website	6
Ordering materials through interlibrary loan	3	Links to subject guides for finding information about particular subjects	6
Selecting online databases to use	1	Responses to questions you	2

posted on
Blackboard®

Cross case analysis – student perceptions of embedded librarian’s value.

Findings reported for each case provided insight to students’ overall perceptions of the value of the embedded librarian in their online courses. Two survey questions specifically asked students about their perceptions of value of the embedded librarian. One question asked if the librarian contributed to their success in the course, and another question asked if the librarian’s participation in the Blackboard® course site was valuable.

Thirty-two students responded to these two survey questions across the four cases. In aggregate, 15 (46.9%) out of 32 students indicated that the embedded librarian contributed to their success in the course, and 18 (56.2%) out of 32 students indicated that the librarian’s participation in Blackboard® was valuable. Responses from the remaining students were divided. Six (18.7%) out of 32 students indicated that the embedded librarian did not contribute to their success in the course, and three (9.4%) out of 32 students indicated that the librarian’s participation in Blackboard® was not valuable. Six (18.7%) students answered “Other” to both questions, and five (14.3%) of the students replied “Not sure” to both questions. The data are illustrated in Table 21.

Table 21

Value of Embedded Librarian Across Four Cases – Survey Responses

(N = 32)

Librarian Contributed to Student’s Success in Course		Librarian Participation in Blackboard® Course Site Valuable	
Yes	15	Yes	18
No	6	No	3
Not Sure	5	Not Sure	5
Other	6	Other	6

Cross case analysis – cross tabulations of student perceptions. After reviewing survey results for each individual case and data aggregated across the four cases, the researcher sought to determine relationships between some of the survey data. Using SPSS software, survey data was cross-tabulated to answer six questions: 1) Is there a relationship between student enrollment status and student perceptions of the librarian's value? 2) Is there a relationship between having prior library instruction and the perceived value of having library instruction within the online course? 3) Is there a relationship between the student's prior library instruction and their perception that the embedded librarian contributed to their success in the online course? 4) Is there a relationship between the type of assistance sought or received and the student's perception that the librarian contributed to his or her success? A description of each cross tabulation follows. The analysis of the survey data was not expected to show statistical significance but instead to show differences and similarities across cases and to triangulate qualitative data.

Cross tabulation #1 – student enrollment status and librarian's value. The researcher sought to determine if there was a relationship between student enrollment status and student perceptions of the value of the embedded librarian. The researcher was particularly interested in seeing if undergraduate students and master's degree seeking students had different perceptions of the value of the embedded librarian.

Students indicated enrollment status in their answer to survey question one: "How are you enrolled in this course?" For this cross tabulation, student perceptions of the value of the embedded librarian were derived from student responses to survey question 10, "Does having a librarian assigned to this class contributed to your success in

the course?” and survey question 11, “ Do you think it was valuable to you to have the librarian participate in the Blackboard® course site?” Survey question 1 was designated the predecessor in the cross-tabulation. Survey question 10 and survey question 11 were designated the successors in this cross tabulation. A total of 32 students responded to the questions embedded in cross-tabulation #1. Table 22 illustrates cross-tabulation #1.

Table 22

Cross-Tabulation #1: Relationship Between Enrollment Status and Student Perceptions of Embedded Librarian’s Value

(N = 32)

Enrollment Status	Librarian Contributed to Success	Librarian Valuable in Blackboard®
Undergraduates (n=13)	Yes – 7 (53.8%)	Yes – 8 (61.5 %)
	No – 3 (23.1%)	No – 2 (15.4 %)
	Other – 1 (7.7%)	Other – 1 (7.7%)
	Not Sure – 2 (15.4%)	Not Sure – 2 (15.4%)
Master’s Degree (n=13)	Yes – 6 (46.2%)	Yes – 8 (61.5%)
	No – 3 (23.1%)	No – 1 (7.7%)
	Other – 1 (7.7%)	Other – 1 (7.7%)
	Not Sure – 3 (23.1%)	Not Sure – 3 (23.1%)
Other (n=6)	Yes – 2 (33.3%)	Yes – 2 (33.3%)
	No – 0 (0%)	No – 0 (0%)
	Other – 4 (66.7%)	Other – 4 (66.7%)
	Not Sure – 0 (0%)	Not Sure – 0 (0%)

The results of cross tabulation #1 indicated that seven (53.8%) of thirteen undergraduate students responding thought the embedded librarian contributed to their success in the course, and six (46.2%) of the thirteen master's degree seeking respondents indicated they thought the embedded librarian contributed to their success in the course. The responses of the undergraduate students and the master's degree seeking students differed by one. One more undergraduate student than master's degree student indicated the embedded librarian contributed to their success in the course.

Eight (61.5%) of thirteen undergraduate students responding thought it was valuable to have the librarian participate in the Blackboard® course site, and eight (61.5%) of the thirteen master's degree seeking respondents thought it was valuable to have the librarian participate in the Blackboard® course site. There was no difference in the responses of the undergraduate and master's degree seeking students.

Three (23.1%) of the thirteen undergraduate students responded "No," the embedded librarian did not contribute to their success in the course, and three (23.1%) of the thirteen master's degree seeking students responded "No," the embedded librarian did not contribute to their success in the course. There was no difference in the responses of the undergraduate and master's degree seeking students.

Two (15.4%) of the thirteen undergraduates said "No," the embedded librarian's participation in Blackboard® was not valuable. One (7.7%) of thirteen master's degree seeking students answered "No," the embedded librarian's participation in Blackboard® was not valuable. The responses of the undergraduate students and the master's degree seeking students differed by one. One more undergraduate student than master's degree student indicated the embedded librarian did not contribute to their success in the course.

One (7.7%) of the thirteen undergraduate respondents indicated “other” and two undergraduate students (16.5%) indicated “Not sure” in response to the question about the librarian’s contribution to student success in the course. One (7.7%) of the thirteen master’s degree seeking students indicated “Other,” and three (23.1%) master’s students indicated they were “Not sure” if the librarian contributed to their success in the course. The differences between responses of undergraduate and master’s degree seeking students to these questions are small.

Similarly, one (7.7%) of the thirteen undergraduate respondents indicated “other” and two (16.5%) indicated “Not sure” when asked if the librarian’s participation in Blackboard® was valuable. Among the thirteen master’s students, one (7.7%) indicated “Other” and three (23.1%) students answered “Not sure” in response to the question about the value of the librarian’s participation in Blackboard®. Again, the differences between responses of undergraduate and master’s degree seeking students to these questions are small.

Six respondents listed their enrollment status as “other,” and of these, two (33.3%) indicated the librarian contributed to their success in the course and two (33.3%) indicated the librarian’s participation in the Blackboard® site was valuable. None of the students with enrollment status of “other” answer “No” to either survey question. Of these six students, four (66.7%) replied “Other” when asked if the librarian contributed to their success in the course, and four (66.7%) replied “Other” when asked if the librarian’s participation in the Blackboard® site was valuable.

Overall, there was little difference between the undergraduate students and the master’s degree seeking students in their perception of the value of the embedded

librarian in their courses. The majority of students in each group indicated that the embedded librarian contributed value to their courses. This finding suggests that, when determining which courses should have an embedded librarian, the grade level alone is not a sufficient decision point.

Cross-tabulation #2 – prior library instruction and desire for library instruction.

The purpose of cross-tabulation #2 was to determine if students who had prior library instruction thought a formal library instruction session would be valuable in their online courses. Survey question 4, “Have you received instruction from a librarian on how to do library research as part of a prior course?” was the predecessor in the cross-tabulation. Survey question 9 “Do you think a formal structured library instruction lesson would have been valuable to you in this class?” was the successor. Thirty-two out of 61 students responded. Table 23 illustrates the results of cross-tabulation #2.

Table 23

Cross Tabulation #2: Relationship Between Having Prior Library Instruction and Perceived Value of Library Instruction in This Course

(N = 32)

Had Library Instruction Prior to This Class	Formal Library Instruction Lesson Would Have Been Valuable in This Class
At the study institution (n=18)	Yes – 9 (50%)
	No – 3 (16.7%)
	Other – 2 (1.1%)
	Not Sure – 4 (22.2%)
At another college or university (n=3)	Yes – 1 (33.3%)
	No – 2 (66.7%)

	Other – 0 (0%)
	Not Sure – 0 (0%)
No prior library instruction (<i>n</i> =7)	Yes – 0 (0%)
	No – 5 (71.4%)
	Other – 1 (14.3%)
	Not Sure – 1 (14.3%)
Other (<i>n</i> =4)	Yes – 0 (0%)
	No – 0 (0%)
	Other – 4 (100%)
	Not Sure – 0 (0%)

Overall, ten (31.2%) out of 32 students indicated that a formal library instruction session would have been valuable in this course; five (15.6%) of the 32 students indicated “Not sure;” and ten (31.2%) out of 32 students indicated that a formal library instruction session would not have been valuable in this course. Six (18.7%) of the 32 students answered “Other.”

Looking more closely, the results of this cross-tabulation indicated that 50% of the students who had prior library instruction at the study institution believed that a formal library instruction lesson in their online course would have been valuable. This response suggested three possible interpretations: 1) despite having prior formal library instruction, these students believed they lacked the appropriate library research skills and wanted more training; 2) these students received effective prior library instruction, recognized its importance, and wanted it included in other courses; or 3) students were unable to transfer their library research skills to their online course.

Only one (33.3%) student out of three who received prior library instruction at other institutions thought a formal library instruction lesson would be valuable. Further, of the seven students who never received prior librarian instruction, none indicated that having a formal library instruction lesson in their online courses would be valuable. A possible interpretation of this data is that the students who received library instruction at another institution and those who had no prior library instruction saw no value in having library instruction in their online courses because 1) they believed they possessed sufficient library research skills, or 2) they did not recognize that library instruction might be helpful in their library research.

The quantitative data does not indicate a strong perceived need for a formal library instruction session in the online courses of the study. Detailed examination of the data, however, suggests that the instructor and librarian should consider students' prior library instruction and perhaps assess student desire for a formal library instruction session when planning the embedded librarian's support to the course.

Cross tabulation #3 – prior library instruction and perception of embedded librarian's contribution to success in course. The researcher sought to understand if student perceptions of the embedded librarian's contribution to their success in the course were affected by library instruction they received previously. The purpose of cross tabulation #3 was to determine if there was a relationship between prior library instruction and student perceptions that the embedded librarian contributed to their success in the online course. Survey question 4, "Have you received instruction from a librarian on how to do library research as part of a prior course?" was the predecessor in

this cross tabulation. The designated successor was survey question 10, “Do you think having a librarian assigned to this class contributed to your success in the course?”

Thirty-two students responded to the questions in cross tabulation #3. Twenty-one (65.6%) of the 32 respondents had prior library instruction, and of the 21 having prior librarian instruction, 10 (47.6%) said that the embedded librarian contributed to their success in the course.

Eighteen students indicated they received prior library instruction at the study institution. Eight (44.4%) of the eighteen responded that having a librarian assigned to the class contributed to their success in the course; four (22.2%) responded no; one (5.6%) responded “other;” and five (27.8%) responded they were not sure.

Three students received library instruction at a prior institution. Two (66.7%) of these students indicated they thought having a librarian assigned to their online class contributed to their success in the course. One (33.3%) of these students responded with other comments. None responded “no” or “not sure” when asked if having the librarian contributed to their success in the course.

Seven students reported never having library instruction prior to their online course. Five of these students (71.4%) believed having a librarian assigned to their class contributed to their success in the course. Two (28.6%) believed that having a librarian assigned to the course did not contribute to their success. None responded with other comments or indicated “not sure” when asked if the librarian contributed to their success in the online course.

Four students indicated “other” when asked if they had received prior instruction from a librarian on how to do library research. All four of these students responded with

“other comments” when asked if having a librarian assigned to their class contributed to their success in the course. Table 24 presents the results of cross-tabulation #3.

Table 24

Cross tabulation #3: Relationship Between Prior Library Instruction and Perception of Librarian’s Contribution to Success in Course

(N = 32)

Had Library Instruction Prior to This Class	Librarian Contributed to Success
At Towson University (n=18)	Yes – 8 (44.4%)
	No – 4 (22.2%)
	Other – 1 (5.6%)
	Not Sure – 5 (27.8%)
At another college or university (n=3)	Yes – 2 (66.7%)
	No – 0 (0%)
	Other – 1 (33.3%)
	Not Sure – 0 (0%)
No prior library instruction (n=7)	Yes – 5 (71.4%)
	No – 2 (28.6%)
	Other – 0 (0%)
	Not Sure – 0 (0%)
Other (n=4)	Yes – 0 (0%)
	No – 0 (0%)
	Other – 4 (100%)
	Not Sure – 0 (0%)

Table 24 illustrates that 9 (50%) of the students who had prior library instruction at the study institution did not believe or were not sure that the librarian contributed to their success in the course, however 8 (44.4 %) of the 18 students who had prior library instruction at the study institution believed that having a librarian assigned to their class contributed to their success. The nearly equal split in results indicates no significant difference in the impact of prior library instruction on student perceptions of the embedded librarian's contribution to their success in the course.

In contrast, five (71.4%) of the seven students who had no prior library instruction believed that having a librarian assigned to their class contributed to their success in the course. It is interesting to note that cross tabulation 2 reported that five (71.4%) of the seven students who had no prior library instruction did not believe that a formal library instruction lesson would have been valuable in their class. While it is not known if the same students responded similarly to the questions in cross tabulations 2 and 3, perhaps the results of cross tabulation 3 indicate that students in this category appreciated having the librarian available through their classes, but they did not see the need for a formal library instruction lesson.

Two out of three students (66.7%) who had library instruction at another institution believed that having a librarian in their class contributed to their success. This finding may imply that the prior instruction was inadequate, however the number of respondents in this category was too small to draw a firm conclusion.

Overall, the results of cross-tabulation 3 suggest that students who had no prior formal library instruction or had received library instruction at another institution believed that the embedded librarian contributed to their success in the course. Students

with prior librarian instruction from the study institution were nearly evenly divided in their opinion of the librarian's contribution to their success in the course. These results suggest that students' prior library instruction should be considered when planning the range of librarian's support to the online courses.

Cross tabulation #4 – assistance received and perception of embedded librarian's contribution to success in course. The researcher sought to identify types of assistance students sought and received that may have affected student perceptions of the librarian's contribution to their success in the courses. Survey question #7, "What types of assistance did you seek from the librarian?" and question #8, "What types of assistance did you receive from the librarian through the Blackboard® course site?" were the predecessors of this cross tabulation. Survey question #11, "In your opinion, do you think having a librarian assigned to this class contributed to your success in the course?" was the successor in the cross tabulation.

The three types of assistance sought most often by students who thought having an embedded librarian contributed to their success in the course were constructing a research strategy (6 out of 12 students, or 50%); using and searching online databases (5 out of 12 students, or 41.6%); and using proper citation style (4 out of 12 students, or 33.3%).

The three types of assistance received most often from the librarian through the Blackboard® course site by students who thought having an embedded librarian contributed to their success in the course were links to tutorials to help use the library (9 out of 13 students, or 69.2%); general information about library resources and services (8

out of 13 students, or 61.5%); and links to the Cook Library website (7 out of 13 students, or 53.8%).

Table 25 illustrates the types of assistance sought, types of assistance received, and a positive relationship with the students' perception that having a librarian assigned to the class contributed to the students' success in the course. The results of this cross tabulation suggest six types of assistance that should be strongly considered for inclusion in the embedded librarian's portfolio of support.

Table 25

Cross Tabulation #4: Relationship Between Assistance Sought and Received, and Librarian's Contribution to Student Success

(N = 32)

Top Types of Assistance Sought	# of Students	Yes, Librarian Contributed to Success
Constructing a research strategy	12	6 (50%) out of 12 students
Using and searching online databases	12	5 (41.6%) out of 12 students
Using proper citation style	12	4 (33.3%) out of 12 students
Top Types of Assistance Received via Blackboard®	# of Students	Yes, Librarian Contributed to Success
Links to tutorials to help use the library	13	9 (69.2%) out of 13 students
General information about library	13	8 (61.5%) out of 13 students
Links to the Cook Library website	13	7 (53.8%) out of 13 students

Cross case analysis - embedded librarian in context in four cases. The embedded librarian served each of the four online courses in this study. Data about his perception of the work of the embedded librarian was collected through two interviews (LG-1and LG-2) and personal documentation he called "Embedded Librarianship Journal"

(LJ), “Embedded Librarian Proposed Support Schedule” (LSS), and “Embedded Librarian Question Statistics” (LQS). In addition, data related to his perception emerged from the Blackboard® course management system (Bb). Earlier review of the findings for each case included descriptions of the embedded librarian’s perception as they relate to each individual case. Findings of the embedded librarian’s overall perceptions are in this section.

Communication of embedded librarian in four cases. In all four cases, modes of communication between the librarian and instructors included e-mail and telephone. Face-to-face communication occurred in all but one course. Librarian-instructor communications for each course began during the planning process. In Cases One, Three, and Four, the librarian met face-to-face with the instructor to discuss and plan the embedded services. In Case Two the planning communication occurred via e-mail and telephone. Throughout the summer session, e-mail was the most commonly used communication format between the librarian and the instructors of all four courses. In terms of timing, frequency, content and format, however, communication between the librarian and instructors varied by course and is described in the findings section for each case.

The embedded librarian communicated with students via Blackboard® discussions forums, WebEx, chat, e-mail, and telephone. The librarian used e-mail and telephone to provide one-on-one feedback to individuals. He gave class-wide support through Blackboard® discussions and chat. In Case One the instructor invited the librarian to participate in class introductions via WebEx. Virtual office hours were conducted via chat. Some students demonstrated a preference to communicate via individual e-mail

rather than open discussion boards. Other students used chat for one-on-one communication with the librarian, even though chat was intended for group use. According to the librarian's data maintained for each course, 75.6% (28 out of 37) of the students' questions came to him via e-mail; 21.6% (8 out of 37) of the questions came to him from the discussion board; and 2.7% (1 out of 37) came through virtual office hours follow-up.

Assistance provided by embedded librarian in four cases. During the planning process, the librarian explained his role and offered potential activities to all four instructors. To provide some consistency across courses, the librarian created and gave each instructor a template outlining support he would provide for every course. The template reflected the librarian's common activities which included introducing himself to the students; announcing "Ask a Librarian" discussion board; establishing and holding virtual office hours; posting instructional materials and links to help guides related to library research; monitoring discussion board posts; and reading and responding to questions. The embedded librarian reviewed and analyzed the syllabus for each course to ensure appropriate level and breadth of support. He tailored specific services to best meet the needs of the students and instructors in the individual courses.

The embedded librarian's activities were grounded in a student-centered approach that included individualized and group instruction. He provided individualized consultations via telephone and e-mail and hosted chat-based virtual office hours that were open to the entire class. He monitored students' assignments, which enabled him to anticipate questions and post instructions targeted to specific topics that might cause concern. He implemented a "just in time" approach to provide information at times most

relevant to students' assignments. The librarian provided students with online instructional materials such as web-based subject guides, citation style sheets, video tutorials, and YouTube videos, many of which had been created by his librarian colleagues. He assisted students in accessing services and requesting materials through interlibrary loan. In a few cases the librarian fielded questions that were more appropriate for the primary instructor when the primary instructor was not available.

He read student blogs and the related instructor comments. He followed student postings on the course management system discussion boards and provided global feedback to the entire class. He reviewed students' work such as search strategy journals and annotated bibliographies, and he gave individualized and global feedback on search strategies, resource quality, citation styles, and plagiarism. When he found that his initial attempts to provide specific comments for each citation error became unwieldy, he transitioned to providing global responses that indicated categories of errors and gave links to relevant online resources, enabling every student to benefit from his guidance.. The embedded librarian viewed his feedback activities as a "kind of assessment role" (L1).

Once he realized that some students did not know how to use the Blackboard[®] chat service, he posted instructions on the Blackboard[®] course site. These instructions came from the university's technology support website. He also responded to questions about discussion board subscriptions and explained how Blackboard[®] announcements could be automatically forwarded to the student's e-mail address (L1).

According to his "Question Statistics," the embedded librarian responded to a variety of types of questions across the four courses in the study. The majority of

questions (45.9%, 17 out of 37) pertained to citation styles. Questions about search strategies were the second most frequent (24.3%, 9 out of 37). Five out of thirty-seven questions (13.5%) asked for clarification of assignments. Student requests for assistance in accessing resources and using interlibrary loan comprised 8.1% (3 out of 37) of the questions. Other student questions related to resource evaluation, service coordination, and technology use – one question on each of these topics. (LQS).

Cross cases analysis - embedded librarian's perceptions. Research question three asked, “What is the librarian’s perception of how the embedded librarian works in an online class?” Data emerged from two interviews, from documents created by the librarian called “Embedded Librarianship Journal” (LJ), “Embedded Librarian Proposed Support Schedule” (LSS), and “Embedded Librarian Question Statistics” (LQS), and from Blackboard® postings (Bb). The data was coded iteratively. The coding scheme developed from librarian data across all four cases is illustrated in Appendix N. Three themes emerging from the data: the librarian’s perceptions of the value of the embedded librarian, challenges to the work of the embedded librarian, and enhancements for the work of the embedded librarian, are presented below.

Value of the embedded librarian. The embedded librarian’s perception of his value to the online courses was defined through several factors emerging from the data across the four cases: communication, planning, role clarification, student characteristics, librarian availability, assistance to students, supporting resources, and student learning.

Clear *communication* between the librarian and instructors benefitted the students. The embedded librarian underscored the importance of being able to work in a variety of communication channels (LG-1). He wrote in his journal, “Professors made very good,

different efforts to keep me in the loop,” such as e-mailing the best student paper and a list of common citation problems; e-mailing me student grades with instructor comments; and copying me in e-mails to students that related to the research projects (LJ).

Early *planning* between the librarian and instructors about the librarian’s responsibilities was found to be critical. The embedded librarian confirmed that adequate planning takes time, particularly in the presence of extensive interactive instruction. Planning conversations that occurred early resulted in a “much more fine tuned collaboration” between the librarian and instructors (L1).

Early *clarification of the roles* of the embedded librarian and the subject specialist librarians was vital. This role clarification facilitated referrals to the subject specialist by the instructor and by the embedded librarian. The distinction between the librarians also helped the students understand why someone other than the embedded librarian might handle some of their questions. The embedded librarian alluded to the benefit of clarifying his role in relation to the instructor. He reported the real time introduction via WebEx “might have actually contributed to [the students’] willingness to use me more” because the students closely linked him and his role with the instructor and the course (L1).

Student characteristics, specifically the lack of library research skills, contributed to the value of the embedded librarian’s work. The *librarian’s availability*, particularly when assignments were due and when the instructor was not accessible as well as ongoing librarian-instructor communication helped the librarian provide appropriate and timely *assistance to students*. For example, in one course the instructor posted a general

instruction to students on Blackboard[®], and the librarian followed up with class-wide comments describing students' research strengths and areas to improve (L1).

Supporting resources pre-selected by the instructor allowed the librarian to focus on other areas of support, contributing to the value of his work. The librarian and instructor collaboration benefitted *student learning*. For example, when an instructor gave the librarian access to assignments posted on Blackboard[®], the librarian could anticipate students' questions and create targeted responses, enhancing his support to student learning (L1).

Challenges to the work of the embedded librarian. Data emerging from the librarian's interviews and documents in the four cases suggested several factors related to his perception of the challenges to the work of an embedded librarian: communication, planning, role clarification, timing of course, schedules of students and librarian, assistance to students, supporting resources, technology functionality, and workload.

Communication. Communication contributed to the challenges of the embedded librarian's work at times. One course was added to the study during its first week, so the librarian and instructor communicated, planned and implemented embedded activities concurrently. With the least personal interaction between the librarian and instructor during the pre-collaboration phase, this course experienced misunderstood expectations and unclear logistics at the beginning (L1).

Insufficient communication challenged collaborative teaching in other ways. In one course, the librarian and instructor had not adequately clarified their responsibilities for a particular assignment, and they had to "scramble at one point to get the feedback to the students in time" (L1). Although the students received the needed support, the

librarian explained the gap in communication and conceded, “we hadn’t thought about breaking our roles down to such a fine-tuned level because we were all used to teaching alone” (L1).

Planning. In all cases, limited time for planning created challenges. “Trying to communicate with the professor to clarify [syllabus and assignments] questions in the first few weeks is really not easy because that’s when the professor is really busy getting the course off the ground with the students” (L2). The embedded librarian described the beginning of the semester and just prior to it as an intense time for planning and communication, particularly in terms of matching his support to the needs of the course. He explained that if the librarian gets the syllabus a week or a few days before the class starts, or after the class has already started, the librarian is under a “real scramble crunch time at the outset” (L2).

Role clarification. Another challenge that surfaced was associated with clarifying the role of the subject specialist librarian versus the embedded librarian. Some students had previously developed relationships with the subject specialist librarians and directly consulted them rather than the embedded librarian. In these instances, the students received the support they required, however it suggested potential for confusion.

Role clarification surfaced as a problematic issue within the Blackboard® environment. The Blackboard® course management system requires each participant in the course to have a prescribed role, the most common roles being instructor and student. The university in this study did not have a “Librarian” designation in its Blackboard® portfolio, so each instructor had to assign the embedded librarian the role of “instructor,” “teaching assistant,” or “student.” Each role carried specific privileges or limitations.

Some instructors assigned the librarian the role of instructor, which provided the most access to student work, enabling the librarian to assist students quickly. The instructor designation, however, confused some students who thought the librarian would also answer content questions about the course (L1). The teaching assistant designation limited the types of student information viewable to the librarian, potentially detracting from the librarian's ability to provide timely assistance. The embedded librarian requested the institution's Blackboard® administrator to create a specific role as "Librarian," however this task was not completed until after the study had concluded (L1).

Timing of the course. Timing of the course contributed to the challenges of the embedded librarian's work. The online courses in this research study occurred during the summer, and a holiday was situated in the middle of the sessions. Despite the short sessions, course content was not reduced and students carried a heavy workload in a compressed time frame. Further, the librarian was off duty for a couple of days before and after the holiday. He alerted the students to his pending absence, however he noticed when he returned "There was a downturn in their use of me, so I had to step up my communication to remind them that I was available" (L1). This situation, according to the librarian, underscored the importance of maintaining visibility and an active presence in the courses (L1).

Schedules of students and librarian. The librarian's vacation posed a bit of a challenge. Although the embedded librarian arranged for backup support for the subject specialist librarians during his absence, he was concerned that the students did not contact the subject specialist. In addition, at one point, the students' class schedules conflicted

with the librarian's scheduled virtual office hours. The librarian remedied this problem by changing the virtual office hours, however the conflict created a challenge initially.

Assistance provided to students. The librarian was challenged in determining strategies to help students with citation styles. Several approaches were used until the most effective and efficient strategy was found.

Supporting resources. The importance of two types of supporting resources for the online courses was underestimated or unanticipated. Due to time constraints, the embedded librarian utilized existing supporting resources developed for other courses by him or his colleagues. He did not create any new modules (L1). He acknowledged the need for longer preparation time in order to create new instructional modules using instructional technologies such as video or screen capture.

The embedded librarian discovered the need to provide instructions for basic technology use. He found that some students lacked experience using some technology-based functions such as chat, so it was important to post instructions for accessing the service. In addition, he recognized that online students may not have convenient technology support available and that basic technology tips must be provided (L1).

Technology functionality. In terms of technology functionality, the chat service hosted by Blackboard® was unreliable and created frustration for the librarian and students. "I had a lot of trouble with the chat service or the chat functionality in Blackboard® did not work. It caused a lot of problems" (L1). "Being able to come up with backup solutions when the technology doesn't work is really, really important" (L1). In addition, some students unfamiliar with chat experienced confusion about which technology-based tool to use for particular types of communication.

Workload. Workload proved to be a significant factor contributing to the challenges of the embedded librarian. The embedded librarian reported that, because he was virtual, he was expected to be available anytime, anywhere, and “the anytime part stretches the workday” (L2). He testified, “it’s very difficult to ignore when you see that you get an e-mail from a student and you’re not quite to sleep yet, or you’re not quite to bed yet, and you wonder how critical their need is. You’ve already read the e-mail, so you’re already working” (L2). He further explained, “I would answer e-mails and questions up until nine at night anyway, and that’s when I often did my office hours to meet the needs of nontraditional students, who are those often taking classes online” (L2). He recounted being available on Sundays for the nontraditional students. He felt that he was always on call for the students (L2). He added, the course instructor could not readily observe all the assistance the librarian provided to the students. Direct e-mail messages, text messages, and phone calls between students and the librarian were not visible to the instructor (L1).

The librarian emphasized the need to examine the equivalency of the embedded librarian’s workload to that of a librarian who is not embedded in an online course. In his words, “how do you translate what you do at weird times and in weird places into a regular workday?” (L2). A related concern he cited was the need to demonstrate fulfilling workload without exceeding it to a point where burnout is a consequence (L2).

In addition to the hours, the place of work was a challenge. The embedded librarian worked from home, from the library, and from remote locations where he was “doing something else in my regular life at a time I need to be available for this block of

time for the students” (LG-2). He explained that ideas of the traditional workspace dissolve: both workload and workspace become interwoven into the non-work of life.

Future enhancements to the work of the embedded librarian. Data emerging from the librarian’s interviews and documents in the four cases provided insight to the librarian’s perception of future enhancements to the work of the embedded librarian. Suggestions woven from his observations were related to communication, planning, role clarification, librarian competence, supporting resources, instruction and assignments, instructional design, student learning, technology functionality, workload, and types of courses to support.

Communication. “I would emphasize that the embedded librarian can be really important, but the librarian has to be active and it has to keep up a regular communication.” (L1). He expounded, “When [students] see that there’s communication between both [instructor and librarian] as evidenced on something as important as the contract of the syllabus, they don’t think that they’re parallel or separated. ...They think that our services are integrated” (L1).

The librarian in this study recognized the need to clearly communicate the value of the embedded librarian concept. “We have to be the ones who are forward thinking enough to volunteer what we could offer in very concrete ways” (L1). He advised embedded librarians to describe their value in terms of the course objectives, student learning outcomes, and student success. He offered that “the more you work with a certain professor, with a certain department, with a certain discipline, then the value of the embedded librarian will grow” (L1). He emphasized, “it’s important to communicate the value clearly when it may be hidden in some cases” (L1), and he recommended

tracking and reporting the number of student questions to the professors “so that they have a clearly communicated value for the course” (L1).

Planning. The librarian observed that more advance time for planning was needed between meeting with the faculty and beginning the class. The librarian recommended that collaboration with the instructor occur early and continuously throughout the course because “staging or phasing of our services is critical” (L1). Preplanning, especially for a first time embedding arrangement, requires time for the librarian to analyze the syllabus and stage his support to align with the assignments. “If the professor hasn’t clearly staged the assignments in a way that is productive for the students, then [the librarian must] ask, ‘Can I help you stage this?’” (L2). Greater time for collaboration and planning will give the librarian an opportunity to “tailor my support to the specific assignments – a big help to the students, rather than giving more generalized type of support.” (L1)

This librarian suggested, “An ideal preplanning with the professor ... would be kind of a collaborative workshop brainstorming type of session that happens at the point when the faculty may be re-creating assignments they’ve used before in the face-to-face for an online environment. ... where you have librarians and faculty working together, then the assignments are going to be naturally more embedded.” (L1)

The embedded librarian advised that planning and preparation time prior to the beginning of a semester be included in calculating the librarian’s workload. (L2).

Role clarification. For the future, this embedded librarian stressed the need to clarify the roles of the embedded librarian, subject specialist librarian, and instructor. “It would be very important to understand the role in this kind of library environment of the

subject librarian, and to be able to understand that role clearly so that referrals can go smoothly” (L1). The embedded librarian also described a form he was developing to ensure that the instructor and librarian assessment responsibilities are clarified (L1).

Librarian competence. Data emerging from interviews with the embedded librarian reflected his belief that the librarian’s “understanding of faculty roles and culture is kind of a fundamental part of collaborative skills.” He continued, “Understanding where the faculty are coming from, as well as understanding where the students are coming from, [in other words] a broader academic cultural perspective” is extremely important (L1).

Also among the librarian’s competencies, “Familiarity with the Blackboard® technical environment is really, really important. ... [also] flexibility. Being able to shift and acclimate quickly to a different specific Blackboard® environment that’s tied to a specific course, profess, discipline is really, really important” (L1).

Competence includes interpersonal skills, and the online environment calls for excellent interpersonal skills. “Managing to be personable while being functional and important to their assignments could help us get more takers on out service. ... I think in these environments, it may be important to remember that even though it’s important to clarify your concrete value in terms of the function of the class and it being tied to their success, academic success, people are also looking for belonging because that don’t have that physical environment, and they’re not bonded together socially as well as you might be or as naturally as you might be in a face-to-face class” (L1).

Supporting resources. The embedded librarian recognized that customized help guides should be developed to enhance support to each course. In addition, data revealed

that instructions for the use of the technology supporting the courses would be helpful to students. Further, the data indicated that the librarian should review the resources posted by instructors to ensure their accuracy.

Instruction and assignments. Lessons in how to use proper citation style need to be improved and possibly expanded to include practice assignments. In addition, identification of valid resources, particularly websites, needs to be expanded and incorporated into assignments.

Instructional design. The embedded librarian realized that instructional strategies such as chunking, scaffolding, and “break[ing] processes down into really clear steps” would be valuable in the future, particularly when providing instructions for using technology (L1). He referenced the need for the embedded librarian to apply general principles of online teaching. “It’s important to phase things. We know this already by not giving them all of your information at once, but giving them the most important information at certain times with certain assignments” (L1).

Student learning. Data revealed a need to more clearly demonstrate the value of the embedded librarian to student learning. Potential enhancements included explicitly explaining to the instructor the embedded librarian’s value to student learning. In addition, the librarian should track and report to instructors student questions and assistance provided to students.

Technology functionality. The embedded librarian acknowledged that testing and familiarity with a variety of appropriate technologies would help reduce confusion for students, instructors, and the librarian. He advised the librarian to be prepared with backup solutions when the technology does not work as expected (L1).

Workload. Planning and preparations time, if built into the overall schedule of the embedded librarian's work, would be an enhancement in the area of workload.

Clarifying the embedded librarian's hours of availability via e-mail, would be another enhancement related to workload.

Types of courses to support. While citing the overall value of an embedded librarian for online courses, the librarian in this study qualified his comments by prioritizing the types of courses to support. He recommended the embedded librarian less for undergraduates, explaining that there are fewer online classes for freshmen and sophomores because at this institution they are highly residential, and the students are bonded with their professors and subject librarians having been "acculturated to face-to-face courses" (L1). He emphasized that some embedding is helpful in any online class, but passive embedding in which the librarian states his availability, might be sufficient in undergraduate courses because the students are "conditioned already" to consult their instructor or a librarian in person (L1).

This librarian suggested that the embedded librarian would be most valuable in graduate courses that enroll nontraditional students who are not residential and rely on the online environment (L1). He proposed that an embedded librarian is vital in fully online programs, graduate programs, and applied programs. He offered that students in these programs are more self-directed than lower level undergraduates and will take advantage of the embedded librarian service (L1).

The librarian recommended that levels of embedding should be based on the amount of research required in the course and the likelihood that the students would use the embedded librarian. Courses without a research project have less need for an

embedded librarian, and a lower level of embedding could simply include a course guide and discussion board (L1). A more advanced embedding model would be valuable in an online graduate course with a significant research project component (L1).

The librarian in this study also advised that staffing shortages could affect the placement of embedded librarian services, so prioritization of needs, i.e., which courses will benefit the most from an embedded librarian, is a critical consideration (L1).

Cross case analysis - common perceptions of all participants. A review of the perceptions of the instructors, students, and librarian reveals commonalities among these three participant groups across the four cases studied. Some factors are unique to a participant group. Some factors are common to two or three participant groups. Of particular significance are the factors that are common across all three participant groups. As illustrated in Table 26, the common factors that emerged from the data as contributing to instructor, student and librarian perceptions of the value of the embedded librarian are communication, student characteristics, librarian availability, librarian competence, assistant provided to students, student learning, and types of courses to support. The meanings and implications of these commonalities will be discussed in chapter five.

Table 26

Common and Unique Characteristics in Participants' Perceptions of Value Across Four Cases

	Instructor	Student	Librarian
Value	Communication Means of Quality of Content of Style of	Communication Means of Quality of Content of Style of	Communication Means of Quality of Content of Style of
			Planning
			Role clarification
		Timing of course	
	Student characteristics	Student characteristics	Student characteristics
	Librarian availability	Librarian availability	Librarian availability
	Librarian competence	Librarian competence	
	Assistance provided to students	Assistance provided to students	Assistance provided to students
			Supporting resources
	Student learning	Student learning	Student learning
	Assistance provided to instructor		
	Types of courses to support	Types of courses to support	Types of courses to support

Note. Commonalities are codes that are common to at least two of the participant groups.

Table 27 displays the factors that emerged from the data as contributing to instructor, student and librarian perceptions of the challenges to the work of the embedded librarian. Elements common across all three participant groups are noteworthy and include communication, planning, role clarification, student characteristics, assistance provided to students, and technology functionality. The meanings and implications of these commonalities will be discussed in chapter five.

Table 27

Common and Unique Characteristics in Participants' Perceptions of Challenges Across Four Cases

	Instructor	Student	Librarian
Challenges	Communication Means of Quality of Content of Style of	Communication Means of Quality of Content of Style of	Communication Means of Quality of Content of Style of
	Planning		Planning
	Role clarification	Role clarification	Role clarification
	Timing of course		Timing of course
		Schedules of students and librarian	Schedules of students and librarian
	Student characteristics	Student characteristics	
		Librarian availability	
		Librarian competence	
		Assistance provided to students	Assistance provided to students
			Supporting resources
	Student anonymity		
	Technology functionality	Technology functionality	Technology functionality
		Minimal value	
			Workload

Note. Commonalities are codes that are common to at least two of the participant groups.

Characteristics emerging from the data that contributed to participant perceptions of future enhancements for the work of the embedded librarian are shown in Table 28. Most significant are the factors common to the perceptions of all members of all three participant groups - instructor, student, and librarian. These commonalities include communication, role clarification, librarian competence, assistance provided to students,

supporting resources, instruction and assignments, instructional design, student learning, technology functionality, and types of courses to support. The meanings and implications of these commonalities will be discussed in Chapter Five.

Table 28

Common and Unique Characteristics in Participants' Perceptions of Future

Enhancements Across Four Cases

	Instructor	Student	Librarian
Future enhancements	Communication Means of Quality of Content of Style of	Communication Means of Quality of Content of Style of	Communication Means of Quality of Content of Style of
	Planning		Planning
	Role clarification	Role clarification	Role clarification
	Timing of course		
		Schedules of students and librarian	
		Librarian availability	
		Librarian competence	Librarian competence
	Assistance provided to students	Assistance provided to students	
	Supporting resources	Supporting resources	Supporting resources
		Formal library instruction	
	Instruction and assignments		Instruction and assignments
	Instructional design		Instructional design
	Student anonymity		
	Student learning	Student learning	Student learning
	Assistance provided to instructor		
	Technology		Technology

	functionality		functionality
			Workload
	Types of courses to support	Types of courses to support	Types of courses to support

Note. Commonalities are codes that are common to at least two of the participant groups.

CHAPTER V: DISCUSSION

The purpose of this qualitative multicase study was to examine the role of the embedded librarian in online courses. Interviews, an online survey, and documents elicited data from instructors, students, and a librarian about their experiences with an embedded librarian in online courses. The data provided insight to answer the three research questions of this study: 1) What is the instructor's perception of how the embedded librarian works in an online class? 2) What is the student's perception of how the embedded librarian works in an online class? and 3) What is the librarian's perception of how the embedded librarian works in an online class? More specifically, in answer to each research question, data emerged revealing multiple factors that contributed to participant perceptions across three themes: 1) the value of the embedded librarian; 2) challenges to the work of the embedded librarian; and 3) future enhancements to the work of the embedded librarian. This qualitative multicase study added to the body of knowledge about the role of the embedded librarian on online courses.

Chapter five presents a discussion of the significant findings of this qualitative research study. As a result of iterative coding, 20 characteristics, or factors, emerged from the data collected from the instructors, students, and librarian in this study. Tables 26, 27, and 28 display the common and unique characteristics in instructor, student, and librarian perceptions of the value, challenges and future enhancements to the work of the embedded librarian. Common characteristics identified across participant groups are important elements to consider in terms of their implications for future implementations of an embedded librarian program.

From the twenty characteristics identified as contributing to the perceptions of the work of the embedded librarian, nine areas were determined most significant, specifically the following: communication, assistance provided to class, role clarification, librarian availability, planning, librarian competence, technology functionality, librarian workload, and types of courses to support. Connections to the literature are noted. The meanings and implications of the findings are presented. Recommendations for future practice and suggestions for further research are offered.

Communication

Findings from this study indicated that only one factor, communication, was common across the three participant groups and across the three themes of value, challenges, and future enhancements to the work of the embedded librarian. The implication is clear: Communication was a major factor in the perceptions of instructors, students, and the librarian toward the work of the embedded librarian.

Communication affected the work of the embedded librarian in this research study. The embedded librarian used the course management system, e-mail, discussion boards, synchronous video, chat, and instant messaging to communicate with and deliver assistance to students. The variety of communication vehicles enabled students to access assistance using the options that best met their needs and comfort level. The multiple delivery strategies demonstrated the embedded librarian's commitment to meet the varied communication styles of the students.

Course management systems. The four online courses in this qualitative research study were facilitated through the Blackboard® course management system. Similarly, a course management system was used in each embedded librarian

implementation described in the literature. The course management systems supported communication and delivery of course content.

The embedded librarian in this study used the Blackboard[®] course management system to introduce himself and manage an “Ask the Librarian” discussion board; post links to tutorials, web sites, and help guides; and host virtual office hours. Hemmig and Montet (2010) wrote that the embedded librarians at Bucks County Community College used the course management system to introduce themselves; post web-based library tutorials related to specific course assignments; create assignment-based discussions; moderated library research discussions; and encourage students to post questions through the course management. Hemmig and Montet (2010) reported, however, that the students in the embedded librarian pilot project did not use the discussion board for communication. The embedded librarian in this study reported that only eight student questions came via Blackboard[®].

At Athens State University the embedded librarian used the course management system to participate in introductory announcements; create an “Ask Your Librarian” discussion forum; create and post instructional documents and video instruction sessions; and provide assistance through the discussion forum, telephone, and e-mail (Herring, Burkhardt, & Wolfe, 2009). Sullo, Harrod, Butera, and Gomes (2012) indicated the course management system was used to host an “Ask the Librarian” discussion board at George Washington University Himmelfarb Library. The embedded librarian at the Community College of Vermont led an online discussion forum through the course management system used for the class (Matthew & Schroeder, 2006). The pervasive use

of course management systems implies this delivery mechanism is effective for librarian communication and instruction.

E-mail and discussion boards. Among the multiple communication vehicles used by the embedded librarian in this study, students reported a preference for communicating with the librarian via e-mail. They seldom used the discussion board to communicate. The embedded librarian in the study observed this student preference. Similarly, Tumbleson, and Burke (2010) reported the students in their implementation of the embedded librarian model at Miami University's Middletown campus preferred to use e-mail to communicate with the librarian. Hemmig and Montet (2010) found that the students in the Bucks County Community College pilot project did not use the discussion board. Some students in their study contacted the librarians via direct e-mail rather than posting on the course discussion board (Hemmig & Montet, 2010). Sullo, Harrod, Butera, and Gomes (2012) stated that the students they studied at George Washington University contacted the embedded librarian via e-mail and discussion board. Figa, Bone, and MacPherson (2009) reported that at the University of North Texas 99% of the students responded that the bulletin board was a good forum for communication, and 93% of the students preferred using the discussion board for interacting with the librarians. The findings suggest that the preferred means of communication vary and that multiple vehicles for communication are desirable.

While the students in this qualitative research study did not prefer discussion board as a means of communication, seven (21.9%) out of 32 students responding to the researcher's online survey reported that they benefitted from the librarian's responses to the questions and comments posted on Blackboard® by other students in their classes. At

the University of North Texas 95.6% of the students “indicated they benefit from viewing other students’ posts and the replies to them” (Figa, Bone, & MacPherson, 2009). The percentage of students reported in the research data is lower than the data cited in the literature, however the implication is consistent. Students may consult and use information posted by the librarian on the course management system discussion board even if they do not personally communicate with the embedded librarian via the discussion board.

Chat. The embedded librarian in this research study established virtual office hours using the Blackboard[®] synchronous chat tool. The librarian discovered that many students did not understand the differences between the purpose of synchronous chat and other communication vehicles. The embedded librarian offered 21 hours of virtual office hours via Blackboard[®] chat across the four courses, and only three students used the service. This lack of participation may imply difficulties with the technology or may reflect student lack of interest in or availability for virtual office hours. The embedded librarian also found that the Blackboard[®] chat tool was not reliable for the synchronous chat needed for synchronous virtual office hours.

Introduction of the embedded librarian. The embedded librarian’s introduction to students was an important component of communication in the online environment, particularly because the concept was relatively new, and students in online courses may not have realized a librarian was so readily available to assist them. Instructor involvement in introducing the librarian assisted in establishing the librarian’s connections with students. As Matthew and Schroeder (2006) reported, librarians and faculty at the Community College of Vermont recommended that faculty members

promote student interaction with the embedded librarian. Instructors in this research study implemented several strategies for introducing the embedded librarian to students. In all four cases the instructors introduced the embedded librarian in the course syllabus. Case three instructor included a strong, clear descriptive statement of the purpose of the librarian in the course syllabus. The instructor in case one of this study introduced the librarian to the students via synchronous WebEx.

The embedded librarian in this study used the course management system discussion board to provide a statement of welcome, picture of himself, and his contact information. The librarians at Bucks County Community College enhanced their online introductions in the course management system with photos and personal information so that students could get to know them and become comfortable contacting them (Hemmig & Montet, 2010).

The embedded librarian in this study believed the synchronous WebEx introduction in Case One benefitted his communication with the students, helping the students recognize and feel comfortable with him, while strengthening their connection and facilitating their interaction with him. In a similar vein, Konieczny (2010) recommended that, if was not possible for embedded librarians to meet with students face-to-face at the beginning of the course a synchronous virtual meeting for welcome and introductions was encouraged. The research findings and literature implied that introduction of the embedded librarian is an important facet in communication.

Quality of communication. The findings from this research study indicated some challenges to the work of the embedded librarian related to communication. One student in the study believed the response time from the librarian was too long. The

instructor in Case Four suggested that the embedded librarian might need to be more proactive in communicating with the students. The instructor in case two admitted that she should have been more proactive in staying in touch with the librarian about student progress. The embedded librarian in this study discovered that communicating information to all students simultaneously could be improved by providing global feedback (LG-1). At Ferris State University, Konieczny (2010) observed the need to indicate when discussion boards would be monitored so student expectations for response time are clear. The findings from this study and the literature suggest that clear guidelines are necessary to ensure effectiveness of communication strategies used in the embedded librarian program.

Other communication considerations. Although the embedded librarian in this study assured students that they had access to the subject specialist librarians while he would be on vacation, he remained concerned about their communication during that time period. Upon returning from vacation, he noticed a lull in communication and recognized a need to remind the students that he was back and available to them. This episode may imply that the students were uncertain about the support available to them. It may also imply that the students did not need the librarian's assistance during his absence.

Recommendations for future practice related to communication. The research study and literature demonstrated that communication is a critical component of the embedded librarian program. The embedded librarian must communicate clearly, frequently, and proactively with instructors and students using multiple channels of communication. As a standard practice, course management systems should be utilized

as one tool for librarian communication with and delivery of assistance to students. In addition, other methods of communication, such as e-mail, instant messages, synchronous video, and chat should be employed to meet the preferences and styles of students.

The embedded librarian can be considered a key instructional support in the online course, and the introduction of the librarian can assist in communicating the librarian's role. The introduction could highlight the embedded librarian's approachability, availability, presence, and role in the course. A variety of communication techniques and strategies that facilitate student interaction with the embedded librarian could be employed. For example, to encourage communication, the instructor and embedded librarian could develop an activity that requires each student to interact individually with the librarian at the start of the course.

The embedded librarian should provide communication tips for students including guidelines indicating when to use chat and when to use other means of communication. If virtual office hours will be used in the course, the embedded librarian and instructor need to explain to students the benefit of participating in virtual office hours. The embedded librarian must test the chat tool extensively prior to using it in an online course and must be prepared with a backup solution in case the chat tool does not work reliably. If synchronous video technology will be used, the embedded librarian must provide students with instructions and assistance for setting up the technology.

The embedded librarian must respond to electronic messages in a timely manner, for example, within a 24-hour period. The response times must be clearly stated and followed. The librarian must notify students when discussion boards will be monitored so students will know when to expect responses. The librarian could also explain to

students that some responses will be individualized and some feedback will be global to benefit the entire class.

Communication will ebb and flow throughout the course, and the embedded librarian should reinforce the fact that another librarian will be available as well. It would be helpful to explicitly introduce the other librarian to the students prior to the embedded librarian's absence. If the absence will extend over a prolonged period of time, the backup librarian could reach out to the students at least once during the embedded librarian's absence and offer assistance.

Suggestions for further research related to communication. This study and the literature indicated that some students utilized the course management system discussion board and others did not. Further research could examine reasons for student preferences related to means of communication and determine if an alteration in the embedded librarian's communication methods is needed. Related research could examine the use and effectiveness of chat tools for librarian virtual office hours in online and hybrid courses. Research could explore the elements that affect student use of the embedded librarian. For example, does the way the instructor introduces the librarian affect student use of the librarian? More specifically, does the introduction affect student perception of the embedded librarian as an instructional partner in the course?

Assistance Provided to Class

The embedded librarian's primary purpose was to provide library resources, services, and assistance to online learners. With a student centered focus, the embedded librarian in this research study provided a variety of types of assistance. The types and timing of assistance were affected by student characteristics and instructor demands.

Types of assistance provided. Students in this qualitative study received a wide array of assistance from the embedded librarian. Table 20 illustrates the assistance provided by the embedded librarian as reported by survey respondents across the four cases in the study. The literature described similar types of assistance provided to students, including searching databases, finding full-text articles, linking to tutorials, citing sources, and using the library's online catalog.

Research strategies. The embedded librarian provided a wide range of student-centered assistance that varied in content, format, delivery mode, and timing depending on the individual course supported. Instructors in this study reported that the embedded librarian assisted students with developing search strategies, evaluating resources, narrowing topics, locating materials, retrieving full text articles, determining search terms, preparing literature reviews, and using citation styles. Similarly, the embedded librarians at the Community College of Vermont provided instruction, posted tips about narrowing topics, linked to databases, and answered about selecting appropriate databases and using correct citation format (Matthew & Schroeder, 2006).

Instructor comments in this study indicated that the students needed additional assistance from the embedded librarian on topics including intellectual property rights and website evaluation. At Miami University, Middletown, the faculty suggested three areas for growth in assistance from the embedded librarian: students properly evaluating websites; librarians notifying class of technical difficulties; and students correctly citing sources (Tumbleson & Burke, 2010). These findings in the study and the literature suggest that instructors may not have considered the full range of support the embedded

librarian could provide. Another implication is that the instructors may not have realized the types of assistance their students would require.

The embedded librarian in this study provided instructional resources such as online instructional guides and video tutorials about selecting key words, developing search strategies, using databases, finding journal articles, and citing sources. In their survey responses and interview comments, students in this study indicated using help guides, course gateways, and subject guides. Students may not know the nuanced differences among these resources materials, however they found the materials helpful.

The embedded librarian in this study did not create any new instructional materials for the online courses due to limited planning time, however he indicated that targeted instructional materials would enhance the student-centered work of the embedded librarian. The librarian (LG-1) suggested in his interview “The librarian has to have the foresight to realize that what you build for one course may very well ... be applicable for another course. ... Keep all the things embedded into a particular online course; keep them modular. ... You can extract and mix and match things later on.”

Formal library instruction sessions. While some embedded librarian programs described in the literature mentioned information literacy instruction, none of the cases in this study included a formal information literacy session. Students responding to the researcher’s survey voiced mixed opinions about the need for a formal session of this kind. Some students who had prior formal library instruction expressed a desire for a formal session in the online course. Some students who had no prior formalized library instruction did not indicate a need for it in the online course. The implications of these findings were not clear. One interpretation could be that students who had positive

experiences with formal librarian instruction sessions recognized their value, whereas students without prior formal library instruction did not understand their value. The embedded librarian did not suggest a formal information literacy session for the cases in this study due to lack of time in the short summer session. The instructor in case three indicated a desire to include an information literacy session in the class but recognized it would not fit into the syllabus during the summer session.

Awareness of generally available resources. The embedded librarian in this research study raised student awareness of the library's standard resources and services that the students may not have noticed without his assistance. Sullo, Harrod, Butera, and Gomes (2012) reported a similar occurrence at George Washington University's Himmelfarb Health Sciences Library: While all library services and resources have been available to distance education students "few students are aware of them and even fewer take advantage of them." The research findings and the literature suggest that assumptions should not be made about the students' familiarity with library resources and services.

Assistance provided to instructor. In voicing appreciation for the embedded librarian's support to their students, all four instructors in the multicase study implied that the embedded librarian assisted them as well. Instructor one recognized the embedded librarian's assistance in updating research resources on her web site. This recognition raised a question, however. What is the embedded librarian's role in providing this type of assistance to instructors? The embedded librarian may need to clarify that the role focuses on assisting students and refer instructors to subject specialist librarians for help with their websites. The embedded librarian suggested that faculty be advised to use link

checkers before each semester to ensure their resources links are accurate and functioning. The librarian also recommended that librarians create a central repository for current resources from which faculty could pull links related to their courses. Link checkers and a central repository of current resources would streamline the work of the instructor and the embedded librarian.

Instructor four in the research study specifically noted how valuable the embedded librarian could be to new online instructors and suggested that the embedded librarian teach them how a library session can occur when the students cannot physically visit library. Along those lines, the Community College of Vermont librarians capitalized on the success of their embedded approach and collaborated with faculty who were learning how to teach online, introducing those faculty to the embedded librarian concept (Schroeder, 2011). The implication is that the embedded librarian is a valuable resource for faculty new to online teaching.

Timing of assistance. The embedded librarian in this study was introduced at the beginning of and was present throughout each course. The instructor in case one reported that the students referred to the librarian more frequently at the beginning of the course and concluded that, in the future, the librarian should teach a few sessions early in the course and then be available for consultation during the remainder of the course. In contrast, the embedded librarian reported that across all four cases he was most active during the time the students were working on their research assignments. The embedded librarian demonstrated the “just in time” approach to providing assistance at the most relevant point in the students’ research process. In addition, he adjusted the timing of support, such as virtual office hours, to coincide with students’ assignments.

Matthew and Schroeder (2006) explained that the embedded librarians at the Community College of Vermont waited to enter course until the weeks of the research assignment, providing assistance within the timeframe the students could apply the library instruction directly to their projects. At Miami University, Middletown, embedded librarians focused on different steps in research process at just the right time based on the course syllabus (Tumbleson & Burke, 2010). At Bucks County Community College, the librarians monitored the library discussions for about three weeks from the day the research assignment was posted to a few days after assignment was due (Hemmig & Montet, 2010).

The literature supports the observation of the embedded librarian in this study to provide a baseline level of support throughout a course and intensify the support during the time of the research assignment. The findings suggest that the “just in time” approach is favored, however the timing for assistance will vary depending on what the instructor and embedded librarian determine is best for a particular course and group of students.

Student characteristics. Student characteristics emerged from the data in this qualitative study as contributing to the instructor, student, and librarian perceptions of the work of the embedded librarian and the types of courses to assign an embedded librarian. In particular, research skills and academic background of students affected the work of the embedded librarian.

Research skills. Prior library research skills affect students’ need for and use of the embedded librarian. In this qualitative study some student comments revealed gaps in their knowledge of standard library services and resources available to all students. The comments suggest that the instructor and the embedded librarian cannot presume that all

students have a solid understanding of the library or library research skills, even in upper level courses. When assigned to a course, it would be helpful for the embedded librarian to assess students' existing information literacy skills in order to determine the range of support they need.

Student perceptions of the librarian's helpfulness depended on the student's need for the librarian. Students and instructors in cases three and four had the least need for the embedded librarian, and the embedded librarian was not found as helpful as he was in cases one and two where the students had more need of the librarian. If students had received strong information literacy instruction in the past, a designated embedded librarian may not be needed in the course. If the information literacy skills of the students are minimal, an embedded librarian may be an ideal addition to the course, regardless of course level. The findings suggest that students' library research skills are important to consider when assigning an embedded librarian.

Some students in the case studies believed that students in lower level undergraduate online courses would benefit from the embedded librarian because the students in those courses would lack well-developed research skills. The upper level undergraduate students, on the other hand, should already possess library research skills, therefore the embedded librarian was not needed in these courses. These students suggested that subject specialist librarians, rather than the embedded librarian, should assist upper level students. The literature described embedded librarians supporting courses ranging from undergraduate to graduate level. The research findings and literature imply that course level alone does not indicate student ability to conduct library research.

Students in both undergraduate and graduate level courses may need the embedded librarian's assistance. For example, the instructor in Case One, a graduate level course, reported that it was the students' first introduction to published research, and the students lacked library research skills. The instructor assumed these students needed the embedded librarian's assistance. On the contrary, four students interviewed and six of the survey respondents in Case One indicated they had the necessary library research skills for the course. Possible explanations for the differences in perceptions are that the students lacking research skills were noticed more by the instructor. Perhaps student reported they had library research skills when in fact they did not have the skills necessary for this particular course. Perhaps the number of students who indicated they had library research skills were the minority in this course.

The instructor in Case Two said the embedded librarian was particularly helpful in the graduate class because students are not always prepared for the level of academic work in the program. In addition, as a Case Two student explained, the students had just returned from six months of hospital assignments and needed the embedded librarian's help to get back into the mindset of library research.

Sullo, Harrod, Butera, and Gomes (2012) reported that the Himmelfarb librarians surveyed their students at the start of the courses and identified seven key areas of library research skills to include in their program of support. According to the literature reviewed, Himmelfarb was alone in assessing student library skills at the beginning of the course to which the embedded librarian was assigned.

An important finding of this qualitative study is the need to assess students' information literacy skills at the beginning of the course. The results of this assessment

will enable the embedded librarian to develop support specifically designed to meet students' information literacy needs within the context of the course.

Academic discipline. The students in case two came to the graduate course from a variety of disciplines and professional backgrounds. Not everyone was prepared for the research assignments in the course, which contributed challenges to the work of the embedded librarian. The instructor indicated that many of the students were not familiar with the literature or journals of the discipline. This finding implies that student academic discipline background may affect their readiness to conduct effective library research. Most of the students in case three and case four of the research study had prior course work and research experience in the disciplines of those courses and were acquainted with the subject specialist librarian. All of these factors affected their need for and use of the embedded librarian. One implication is that students with library research experience in the discipline may not benefit from the presence of an embedded librarian and may be better supported by the subject specialist librarian.

Instructor influence on assistance provided by librarian. Instructors in this research study emphasized different library research skills depending on the content and the expected student learning outcomes for the course. The instructor in case one required students to conduct library research that reflected information literacy principles. In case two, the subject specialist librarian provided the information literacy instruction, and the embedded librarian was responsible for providing APA citation assistance. This particular case raised a question. Did the existing relationship between the instructor and subject specialist librarian affect the activities of the embedded librarian? If so,

established relationships between instructors and subject specialist librarians may offset the need for an embedded librarian.

In case three, the need for the librarian's assistance was limited because the instructor taught the students how to use a major library database and a primary dataset for the course research assignment. The instructor asked the librarian to support the students in doing their literature reviews. The instructor in case four expected the librarian to teach students strategies for locating credible online sources of information. These findings imply that course content and instructor priorities affected the assistance the embedded librarian provided.

Recommendations for future practice related to assistance provided by librarian. Based on the findings from this study, several recommendations are made for future practice related specifically to the assistance provided by the embedded librarian. At the beginning of the course, the instructor and embedded librarian may wish to assess the types and level of library research experience students have in order to determine the support they need. The librarian could design or adapt an assessment instrument to include questions that can be easily modified to target specific skills needed for the course under discussion. Using the assessment results, the librarian would focus support on the skills that students will need to succeed in the particular course. In addition, the instructor and embedded librarian could attempt to identify the discipline backgrounds of the students so the embedded librarian can incorporate introductory level content-related resources into the support package if necessary. Periodically throughout the course the instructor and embedded librarian should share observations of student progress and adjust the content and delivery mode of assistance as appropriate.

Realizing that, regardless of the assessment results, some students may not have a basic understanding of the university library, the librarian's support package should include a brief overview of standard library resources and services available to students, such as where to find a list of the library's journal subscriptions, how to access interlibrary loan services, and what is available through the library's website. The embedded librarian could create or point to an online list of frequently asked questions about library resources and services that students could consult.

As a starting point in planning the assistance, the embedded librarian could present the instructor with an overview of the support that could be provided, including a menu of types of library assistance that would enhance student learning in the course. Examples of support topics would be search strategies, database selections, and source evaluation. This conversation could include a description of support the librarian provided to other online courses that might be applicable to the course support being planned. While reviewing the possibilities for assistance, the librarian and instructor could identify additional topics that would be relevant to the specific course goals and would serve the students' needs. In addition to the support activities, the embedded librarian could share examples of the resources used to support students in their library research, such as course gateways, subject guides, tutorials, videos, and websites.

The instructor and embedded librarian could consider including library related assignments that would enhance student learning and success in the course, and they might determine if the librarian would assign library related work to the students. The librarian could create customized assignments that integrate information literacy skills with the content of the course. In addition, self-directed online information literacy

learning modules could be available for students to access independently. The embedded librarian could propose including a formal information literacy session in the course, describing how it would relate to the course goals, fit into the syllabus, and benefit student learning. The instructor and embedded librarian must discuss and determine the timing and staging of the embedded librarian's support, and they must agree to make adjustments depending on student progress. The librarian might explain and suggest implementing a "just in time" approach for providing extra assistance at the point in the course when the students are working on their library research assignments. The librarian must consider the online environment and variety of student learning styles when determining the instructional strategies and instructional technology to use.

The embedded librarian should reach out to new online faculty, demonstrating how the embedded librarian can be incorporated into their classes. While clearly stating that the embedded librarian's highest priority is supporting the students, it is important to establish guidelines for the types of support the embedded librarian will give instructors.

Suggestions for further research related to assistance provided by librarian.

The academic library is committed to provide equivalent support to face-to-face and distance learners. Research that demonstrates this equivalency exists is lacking. Further research is needed to determine if the scope and effectiveness of library support provided by embedded librarian to online learners is equivalent to the library support provided to face-to-face learners.

Role Clarification

The embedded librarian is an active participant in the online course. The primary purpose is to support student learning related to library resources and services, especially in conducting library research. The support can be broad in scope. It is essential to clarify the roles of the embedded librarian, instructor, subject specialist librarian, and students. Lack of clarity causes confusion for the instructor, students, and librarian, hindering the positive impact the embedded librarian can have on student learning.

Instructor and librarian. In Case One the librarian (L1) conceded, “we hadn’t thought about breaking our roles down to such a fine-tuned level because we were all used to teaching alone.” In Case Two, the instructor was not aware of all the ways a librarian can support courses. Instructor two also discovered the importance of communicating clearly the role of the embedded librarian to the students. Instructor three cautioned that the parameters, role, and responsibilities must be defined so that the embedded librarian is not overloaded. Konieczny (2010) advised that the role and responsibilities within the course and in monitoring discussion boards must be clear, including determining who will respond to which types of questions. The research findings and the literature suggest that the scope of the librarian’s work within the course must be clear.

The embedded librarian’s role designation in the course management system emerged as another aspect of role clarification. Each designated role in the course management system authorized different levels of access to the students and their work. Konieczny (2010) reported that the embedded librarian’s role in the course management system at Himmelfarb Library varied depending on the professor and ranged from

instructor to designer, teaching assistant, and student, affecting the tasks the librarian could perform in Blackboard®. Hemmig and Montet (2010) reported that, based on their own comfort level, the instructors at Bucks County Community College designated differing roles for the embedded librarian in the course management system. Burke, Tumbleson, and Frye (2010) reported that faculty at Miami University, Middletown enrolled their librarian in Blackboard® as instructor or “course builder,” and eventually an “embedded librarian” button was added to Blackboard®.

In this research study, instructors designated the embedded librarian as teaching assistant or instructor in the course management system. Instructor two admitted uncertainty about the role to designate for the embedded librarian. The embedded librarian in this study proposed creating a “librarian” designation in Blackboard®, however the study institution would not allow it. The findings of the study and the literature suggest that role designation in the course management system is an important factor in the embedded librarian’s ability to support students.

Subject specialist librarian. For upper level courses the subject specialist librarian can be an important support to students along with the embedded librarian. Students in Cases Two, Three, and Four had previously developed relationships with the subject specialist librarians, and some consulted the subject specialist directly rather than contacting the embedded librarian. There was potential for confusion over which librarian would provide support. These findings suggest that students who have existing relationships with the subject specialist librarian need to know if who they choose to contact makes any difference. The librarians need to decide how they will respond to

students seeking the subject specialist when an embedded librarian is assigned to the course.

Librarian and students. Students need to know that the librarian is an instructional partner in the online course and is endorsed by the instructor. When asked if she would recommend having an embedded librarian in other courses, student S2-1 replied, “Well what other things do the librarians do? Is it mainly just APA and typing or do they do other things as well?” This response implies that the student did not understand of the scope of assistance the embedded librarian could provide. Role clarification begins with the introduction of the embedded librarian and continues throughout the course as the embedded librarian communicates with students.

Recommendations for future practice related to role clarification. The instructor and embedded librarian must clarify their respective roles in terms of availability, providing assistance, responding to student questions, providing feedback to students, and evaluating student work. The embedded librarian and instructor must communicate to students what can be expected from the librarian in terms of support and availability. For example, the librarian is not in the course to do the students’ research as was implied by a student in case four who expected the embedded librarian to locate all the sources needed for the research project.

The roles of the embedded librarian and of the subject specialist librarian must be clear. Students must be informed that the embedded librarian may not be the content expert for the course, and the subject specialist librarian is available to provide content specific assistance.

To assist in clarifying the role of the embedded librarian as an instructional partner in the online course, a “librarian” designation could be created within the course management system that would provide embedded librarians with access to student communications, assignments, and work in the course, thereby facilitating the scope of assistance the librarian can provide to students.

Suggestions for further research related to role clarification. Exploration of the roles and responsibilities of the embedded librarian in relation to the subject specialist would be helpful. Further research could seek answers to the following questions: Should the librarian embedded in online courses be a generalist or a subject specialist related to the particular course? If subject specialists take on the role of the embedded librarian, how should they prepare for working in an online environment if they haven’t done so previously? Does the relationship between students and the subject specialist librarian affect student use of the embedded librarian?

Librarian Availability

Students voiced appreciation for the librarian’s availability, the fact that he was present in the courses, even if they did not contact him. Student S3-3 indicated that, although she did not contact the embedded librarian, “it was comfortable knowing that if you get started somehow you have someone there who can respond to you and help you out....It really gave me, like, the strength, so I’m like, okay, so I can do it on my own, and if I get stuck, I would just ask them a question.” This finding suggests that the presence of the embedded librarian gave this student confidence while being a safety net for her.

Instructors in Cases One, Two, and Four mentioned the importance of the embedded librarian's availability to students. He was there for the students (In1). He was available to support the students (In2). It was beneficial to have the embedded librarian specifically assigned to the class (In 4). Similar comments appeared in the literature. Schroeder (2011) wrote that the Community College of Vermont "embedded librarian program and enhanced online presence [of the librarians] provide students with a personal connection to a librarian as well as library resources and instruction in students' preferred online environment. This combination best serves the needs of the 21st century learner" (p. 77). Sullo, Harrod, Butera, and Gomes (2012) reported comments from George Washington University students such as, "what a wonderful thing to have you, a dedicated resource to this class" (p. 32). The research findings and the literature suggest students value the embedded librarian's presence throughout the online course.

Two students in the research study appreciated that the librarian was available to provide them assistance because they were reluctant to contact their instructor or believed the instructor was not accessible. Student S2-1 explained "because [the librarian's] here, I'm not asking my professor a million questions when he may feel that we should do it on our own." These findings suggest that the students preferred to contact the embedded librarian rather than their instructor.

Recommendations for future practice related to librarian availability. Based on the findings of this study and the examples described in the literature, the presence and accessibility of the embedded librarian in online courses are important and must continue. Even if it appears that students are not communicating with the librarian, the librarian's presence is valued. Students need to be reassured that their questions are welcome. At

the same time, the instructor and librarian need to clearly communicate to the students who will provide them with what types of assistance.

Suggestions for further research related to librarian availability. Student comments implied that the availability of the embedded librarian might affect student communication with instructors. Further research could ask 1) Does the presence of the embedded librarian affect student interaction with instructors; and 2) What do students mean when they say they prefer to contact the embedded librarian and don't want to bother the professor?

Planning

Collaborative planning, started early and continuing throughout the course, will strengthen the embedded librarian's ability to provide appropriate, well-designed support to the students. In this study, the embedded librarian developed and used a planning template that outlined the types and timing of support he would provide for each course. The librarian and instructor one began planning several weeks before the course started, enabling discussion of the course syllabus, class assignments, and the librarians' role. In contrast, Case Two was identified for the study during its first week of teaching, so the librarian and instructor planned and implemented embedded activities simultaneously. Instructor two was unfamiliar with the concept of the embedded librarian and identified a need for more pre-planning time to ensure integration of library services. Instructor three reported that more up front contact and lead time were needed to "more deeply embed" the librarian and work with the librarian in course design. Instructor four also pointed out the need for early planning in order to successfully integrate the librarian into an online course. The librarian (LG-1) proposed that the usual course planning cycle not be limited

to the semester in which the course is being taught, but “include pre time with a support like the librarian.” These research findings suggest that early communication and planning are essential for full use of the embedded librarian program.

Reports in the literature also emphasized the importance of collaborative planning to the embedded librarian program. According to Matthew and Schroeder (2006), the success of the Community College of Vermont embedded librarian program resulted from close collaboration between the librarians and the faculty, innovation and experimentation, and commitment to serving students. Sullo, Harrod, Butera, and Gomes (2012) explained that librarian participation in course planning clarifies roles and expectations. Figa, Bone, and MacPherson’s (2009) research highlighted practices for future embedded librarian efforts and recommended, “faculty should develop an implementation plan that consists of goals and objectives for the service, including the functions expected of the librarian” (p. 93). Owens and Bozeman (2009) wrote that instructor/librarian collaboration is essential in teaching online students.

The findings from this study and the literature suggest that sufficient time for planning must be provided to enable close integration of the librarian into the course design and assignments. During the planning process the librarian can explain the scope of support available to the class; determine the need for customized instructional materials for the course; and have time to create the materials. The librarian and instructor can collaboratively plan when to implement each support strategy and determine the need for a formal information literacy segment.

Recommendations for future practice related to planning. Planning is a critical aspect of the communication between the instructor and embedded librarian.

Planning involves determining the types, levels, timing, and delivery methods of assistance the embedded librarian will provide to students. The scope of the embedded librarian's support could affect elements such as course assignments, instructor expectations of student performance, and librarian workload. It is paramount that the embedded librarian and instructor connect well before the start of the course to plan the librarian's support to the students. Many of the recommendations related to the assistance provided to students involve planning. In addition, it is suggested that the embedded librarian create a checklist and template to assist in the planning process.

Librarian Competence

Instructors valued the embedded librarian's knowledge and expertise. Instructor one commented, the embedded librarian "contributed much of his expertise for addressing some of the challenges students had." Instructor two pointed out, "Librarians have more skills and knowledge in areas than I do." At the University of North Texas, the instructor emphasized the importance of the embedded librarian's expertise, testifying that the students greatly benefitted from "full-time library staff integrated into the classroom to help with issues that would be better addressed by insider-librarian knowledge and problem-solving" (Figa & Bone, 2009, p. 16). Burke, Tumbleson, and Frye (2010) noted that the students were particularly receptive "when they knew that the librarian had an understanding of the course syllabus and course assignments" (p. 55).

The librarian in this study was appreciated for his work in assisting students with basic library research. Students S3-1 and S3-2 believed the embedded librarian lacked the discipline expertise to support upper level undergraduates. This challenge reflected student expectations that the embedded librarian's expertise would match that of the

subject specialist librarian the students had worked with in the past. This finding about the librarian's competence suggests that the roles of the librarians need to be clear, and the subject specialist needs to be available in upper level courses.

Recommendations for future practice related to librarian competence. In addition to expertise in teaching information literacy skills, the embedded librarian needs to understand the course syllabus and assignments for each course to be supported. The subject specialist librarian should be available to provide discipline specific assistance that the embedded librarian cannot provide. As suggested by the embedded librarian in this study, embedded librarians need to understand the pedagogy of online teaching and have experience teaching in the online environment.

Technology Functionality

In the online learning environment, technology reliability is critical to the success of the students and instructors. Online library resources and services compound the necessity for stable, reliable technology. The findings of this study revealed concerns about the course management system, specifically its chat tool. Synchronous virtual office hours were part of the support package the embedded librarian provided, and the course management system chat tool was to be the vehicle for this service. When the tool failed, work-arounds were developed and alternative avenues for support were provided. The experience underscored the importance of reliable technology.

The embedded librarian in this study discovered that some students lacked experience with chat services, implying a need to post instructions for accessing and using the service. All of the interviewed students reported that remote access to the library website and databases was easy. On the other hand, several students indicated

that accessing the SPSS application required in case three was challenging. While SPSS is not an online library resource, the students do not know that. Difficulty accessing SPSS could reflect negatively on the library and on the work of the embedded librarian. These findings suggest that students will expect the assigned embedded librarian to assist them in accessing non-library applications such as SPSS.

Recommendations for future practice related to technology functionality. At its operational core, online learning requires reliable technology. All of the technology planned for the course must be thoroughly tested before it is used. A backup chat technology must be in place in case the course management system chat tool malfunctions. The librarian must be alert to technology problems and communicate technology problems to the students and instructors as soon as they are known. Back up solutions for communication and delivery of library resources and services must be prepared in the event of technology failures. The embedded librarian and instructor should review contingencies and be prepared to implement alternative strategies if necessary.

The syllabus could include contact names and numbers for assistance in the event of technology breakdowns. Students could be instructed to notify the librarian of access problems so the librarian can follow up and investigate. The embedded librarian and instructor should not assume that all students know how to use the technologies applied to online instruction or library research. During the planning process, the instructor and librarian could consider providing basic library and communication technology instructions to students at the start of the course. With or without a technology lesson, the librarian should refer the students to tutorials and help guides relevant to applications

to be used in the course. The embedded librarian needs to be prepared to refer students for help with productivity applications such as SPSS.

Librarian Workload

The embedded librarian reported that some elements of support to online courses were challenging and affected workload. His virtual presence created the expectation that students could contact him at any time and on any day. Essentially always on call, his work hours exceeded the norm. Burke, Tumbleson, and Frye (2010) acknowledged that it was of critical importance to recognize the time consuming impact on the workload of librarians. Hemmig and Montet (2010) discovered that the amount of time required just for monitoring the online courses made is impossible for part time librarians to serve as embedded librarians.

These findings suggest a need for a flexible, adjustable work schedule and clear communication regarding the librarian's availability and response time. In addition, planning integrated library support for online courses requires attention to and collaboration in re-tooling assignments for the online environment. This finding implies a need to extend the time usually allocated for pre-course planning. Another concern is that the workload issues may deter some librarian from taking on distance learning support. The specter of a daunting workload suggests a need to help potential embedded librarians understand how to manage the time and scope of work.

Recommendations for future practice related to librarian workload. The scope of the embedded librarian's responsibilities affect workload, and several workload related recommendations emerged from this study and the literature. As an initiative new to many instructors, the embedded librarian must allow additional time for the

collaborative planning process prior to the start of the course. The embedded librarian may be perceived as being on call around the clock, so it is recommended that clear guidelines for response times be established so that students understand and respect the librarian's availability. Due to the nature of the work, the librarian and supervisor need to reach agreement on a flexible schedule and accountability of time. As new librarians are brought into the embedded role, experienced embedded librarians could assist them in understanding and managing the workload.

Suggestions for further research related to librarian workload. This study and the literature revealed information about the workload of the embedded librarian. The issue yet to be addressed and suggested for further research is the impact of the embedded librarian's responsibilities on the work of other librarians. If the embedded librarian has a flexible work schedule and focuses attention on online learners, how are the schedules and responsibilities of the on campus, face-to-face librarians affected? Will the impact have an effect on library administration's support of the embedded librarian role?

Types of Courses to Support

The primary element to consider in determining which courses to assign an embedded librarian is the need for students to use library resources in the course. If the syllabus does not include assignments rooted in library resources or research, an embedded librarian is not needed. As an example, the embedded librarian in this study reported that case one, with a formal research component, was ideal for an embedded librarian.

As reported in the research findings, arguments can be made to have an embedded librarian assigned to any level of course. According to Tumbleson and Burke (2010), the librarians at Miami University, Middletown said “Upper and lower division courses, all disciplines, and any course format, whether traditional, online, or hybrid, can benefit” (p. 974). Similar to the types of assistance provided, the types of courses to support may be affected by student characteristics such as research skills. While it may seem logical that lower level students would need the embedded librarian’s assistance because they lack library research experience, and upper level students possess well-developed library research skills, the research findings indicated that this assumption cannot be made. Course level alone cannot indicate the type of course to support.

Figa, Bone, and MacPherson (2009) suggested the students would benefit when the embedded librarian worked with a faculty member “with a strong interest in pedagogy and a progressive approach to service to their students” (p. 94). The embedded librarian in this study made a similar recommendation. These findings suggest that the online skills of the course instructor may influence the work of the embedded librarian.

Every factor may point to the need for an embedded librarian, but if a library is short-staffed, the workload is too high, or fiscal resources are not available, it may be impossible to provide the support of an embedded librarian. Student S2-3 suggested balancing the costs involved in allocating an embedded librarian against the benefit the librarian would provide to particular courses. Another student recommended considering fiscal resources, particularly the number of librarians available for all courses, when choosing which online courses the embedded librarian should support. Due to limited

staffing, Athens State University ultimately chose to focus its program only on courses with a formal research component (Herring, Burkhardt, & Wolfe, 2009).

The timing of the course has an impact on the work of the embedded librarian. The cases in this research study were summer courses that ranged in length from five and a half to ten weeks. The summer session began immediately after spring commencement and did not provide a sufficient time for collaborative planning between the instructor and librarian. This observation implies that decisions to embed a librarian in a short summer session must be considered carefully. The course taught by instructor two was only five and a half weeks long, challenging the students and the librarian to accomplish a great deal in a short amount of time. Instructor three explained that the short summer term made planning difficult, and summer session was already packed due to the heavy content and assignments in this undergraduate course. According to instructor four, the compressed summer session makes it harder to plan for a new element in the course, such as the embedded librarian. Instructor four also pointed out that most people who teach summer school are teaching a course they've already taught, which would hinder the addition of the embedded librarian. These findings suggest that the work of the embedded librarian may be challenging during the short summer session.

Case three instructor suggested that an embedded librarian be available for all types of courses, not only online courses. Herring, Burkhardt, and Wolfe (2009) described the expansion of the program at Athens State University from distance education and off-site classes to include blended and on-site classes as well. These findings suggest that the role of the embedded librarian is applicable to multiple course formats.

Recommendations for future practice related to types of courses to support.

As found in this research study and the literature, an embedded librarian could be appropriate for a wide array of courses. It is recommended, therefore, that guidelines be established to help determine and prioritize which courses will be assigned an embedded librarian. Fiscal constraints, particularly manifested through the library's staffing level, affect the availability of embedded librarians. If the overall level of librarian staffing indicates limited availability of the embedded librarian, courses with a significant library research project might receive high priority in assigning the embedded librarian. For some courses, focused support from the embedded librarian may need to be confined to a few weeks when students are doing their library research. Before and after the period of intense support, students could be directed to other librarians for assistance. If students demonstrate library research skills appropriate for the course, perhaps an embedded librarian is not necessary and other librarians could provide support as needed. In all cases, it is recommended that the students be directed to online instructional guides, web-based tutorials, and the library's general virtual reference service for supplemental support.

Based on the findings of this study, it is recommended that the challenges to planning and delivering assistance in a short summer session be considered. For a short session, it might be preferable if the embedded librarian had prior experience working with that instructor. The instructor and embedded librarian would be familiar with expectations, roles, and responsibilities of each other, streamlining the planning and delivery processes.

The concept of the embedded librarian was perceived as valuable in this study and the literature. It is recommended that opportunities be explored for embedding librarians in a variety of courses regardless of delivery format. In addition, successful practices of the embedded librarian in online courses could be applied to embedding librarians in face-to-face and hybrid courses.

Suggestions for further research related to types of courses to support. This study and the literature point to possibilities for expanding the use of the embedded librarian to other types of courses. While literature about the work of the embedded librarian in face-to-face courses is available, formal research on the role or effectiveness of the embedded librarian in face-to-face courses is minimal. In light of recent developments in higher education, research should investigate if there is a role for the embedded librarian in supporting massive open online courses (MOOC's).

Value of the Embedded Librarian

Overall, the findings of this research study suggested that the work of the embedded librarian was valuable, although challenges and recommendations for future enhancements were noted. The four instructors in the research study valued the work of the embedded librarian and indicated they would like to have an embedded librarian again in future courses. These findings echoed reports in the literature of instructors valuing the embedded librarian in online courses. Konieczny (2010) claimed that repeat instructors requesting a librarian monitor discussion boards “indicates that the service is of value to them” (p. 55). Sullo, Harrod, Butera, and Gomes (2012) reported, “faculty members have expressed delight in the library’s services and are excited about having the opportunity for librarians to participate in more [distance education] courses” (p. 32). At

Miami University, Middletown, 44% of the faculty participating in the embedded librarian pilot project responded to a web-based survey, and 100% of those responding reported they would collaborate again with an embedded librarian (Burke, Tumbleson, & Frye, 2010).

The value of the embedded librarian to student learning was cited in the qualitative study and in the literature. The instructors in cases two and four commented on the quality and improvement of student work, attributing both to the assistance provided by the embedded librarian. Similarly, Hemmig and Montet (2010) described an instructor at Bucks County Community College who was pleased with quality of the students' submissions and believed that the information literacy component of the course contributed to student success. Matthew and Schroeder (2006) reported that anecdotal comments at the Community College of Vermont included a professor's accolades, "The students you helped in my marketing class had much better projects than those who did not benefit from your expertise" (p. 62).

Students in this qualitative study indicated that they valued the work of the embedded librarian. The online survey administered in this research study asked students about the value of the embedded librarian in their courses. Of the 32 respondents to the survey, 15 students (46.9%) answered yes, the librarian contributed to their success in the course and 18 students (56.3%) responded that the librarian's participation in the Blackboard® course site was valuable to them. The literature cited students valuing the work of the embedded librarian. For example, at Miami University, Middletown, 70% of the students responding to a survey about the embedded librarian pilot program indicated a desire to have an embedded librarian in future classes (Burke, Tumbleson, & Frye,

2010). When students were surveyed following the first two semesters of the fully implemented program at Miami University, Middletown, they shared a “generally positive view of the embedded librarian.” (Tumbleson & Burke, 2010, p. 979).

An indicator of the overall value of the work of the embedded librarian is how it affects student learning. As a student-centered initiative, the embedded librarian program is intended to support student learning in the areas of information literacy and library research in connection with discipline-based courses. The affect of the work of embedded librarian on student learning in online courses is a critical topic for future research.

This research study did not attempt to assess the affect of the embedded librarian’s work on student learning. The literature reflected only anecdotal evidence of the embedded librarian’s impact on student learning. With the current attention the academic library profession is giving to assessment of students’ information literacy skills and the impact of information literacy on student success, strategies and tools being developed could be adapted to assess the affect of the embedded librarian’s work on student learning in the online environment. Assessment of the impact of the embedded librarian’s work on student success in online learning is an important area for future research.

APPENDICES

Appendix A

Interview of Instructor Protocol

Research: The Role of the Embedded Librarian in Online Learning

Date of Interview:

Time of Interview:

Location of Interview:

Interviewer:

Interviewee:

Role of Interviewee with regard to the research:

Describe the research for the interviewee, including 1) the purpose of the research; 2) types of participants in the research; 3) other sources of data collected for the research; 4) what will be done with the data collected; 5) how long the interview will take.

Have interviewee read and acknowledge the consent form.

Obtain permission to audio record the interview.

Turn on audio recording device and test it.

Questions:

1. Please describe your role in the online course (specify course number and title).
2. What types of interaction did you have with the librarian assigned to this course?
Please be as specific as possible.
3. What types of assignments did you give the students that required them to use library resources or services? Please be as specific as possible.
4. In what ways did the librarian collaborate with you to integrate information literacy competencies, concepts and skills into your course?

5. What were your expectations for the librarian's role in this online course? Were your expectations fulfilled? Please be as specific as possible.
6. What is your perception of the value of the embedded librarian to student success in this online course?
7. If you taught this class again in fully online format with an embedded librarian, what changes would you suggest to ensure that the students receive effective library support? Please be as specific as possible.
8. Would you recommend including an embedded librarian in online courses to your faculty colleagues? Why or why not?
9. What other comments do you have related to the presence of an embedded librarian in online courses?
10. Is there anything you'd like to add?

Thank you for your time and comments. Please contact me if you have any additional questions or comments related to this interview or this research project.

Appendix B

Interview of Librarian Protocol

Research: The Role of the Embedded Librarian in Online Learning

Date of Interview:

Time of Interview:

Location of Interview:

Interviewer:

Interviewee:

Role of Interviewee with regard to the research:

Describe the research for the interviewee, including 1) the purpose of the research; 2) types of participants in the research; 3) other sources of data collected for the research; 4) what will be done with the data collected; 5) how long the interview will take.

Have interviewee read and acknowledge the consent form.

Obtain permission to audio record the interview.

Turn on audio recording device and test it.

Questions:

1. Please describe your role in the online course you are supporting (specify the course number, title, and instructor).
2. What types and how much interaction did you have with the students and professor in this course? Please be as specific as possible.
3. What types of library and librarian support did you provide for this course? Please be as specific as possible.

4. In what ways did you collaborate with the instructor to integrate information literacy competencies, concepts and skills into the course?
5. What skills and competencies were required for you to serve as the embedded librarian for this entirely online course? Please be as specific as possible.
6. What is your perception of the value of an embedded librarian to student success in this online course?
7. If you served as an embedded librarian again in this or in any other course, what changes would you suggest to ensure that the students receive effective library support? Please be as specific as possible.
8. Would you recommend including an embedded librarian in online courses to other instructors? Why or why not?
9. What other comments do you have related to serving as an embedded librarian in online courses?
10. Is there anything you'd like to add?

Thank you for your time and comments. Please contact me if you have any additional questions or comments related to this interview or this research project.

Appendix C

Interview of Student Protocol

Research: The Role of the Embedded Librarian in Online Learning

Date of Interview:

Time of Interview:

Location of Interview:

Interviewer:

Interviewee:

Role of Interviewee with regard to the research:

Describe the research for the interviewee, including 1) the purpose of the research; 2) types of participants in the research; 3) other sources of data collected for the research; 4) what will be done with the data collected; 5) how long the interview will take.

Have interviewee read and acknowledge the consent form.

Obtain permission to audio record the interview.

Turn on audio recording device and test it.

Questions:

1. Please describe your role in the online course (specify course number, title, and instructor).
2. What library skills and competencies were required for you to do research for this course? Did you have the requisite skills before you entered this course? Please be as specific as possible.
3. In what ways did you interact with the embedded librarian in this course? Please be as specific as possible.

4. In what ways did the embedded librarian assist you in this course? Please be as specific as possible.
5. What types of library instructional materials did you use in order to complete the assignments for this course? What materials did you find most helpful? Please be as specific as possible
6. Please describe your experience in accessing online library resources, services, and assistance from off campus for this course.
7. What is your perception of the value of an embedded librarian to your success in this online course?
8. Would you recommend including an embedded librarian in other online courses? Why or why not?
9. What other comments do you have related to the presence of an embedded librarian in online courses?
10. Is there anything you'd like to add?

Thank you for your time and comments. Please contact me if you have any additional questions or comments related to this interview or this research project.

Appendix D

Survey of Students Protocol

1. Are you enrolled in this course as an
 - a. Undergraduate student
 - b. Master's degree seeking student
 - c. Doctoral degree seeking student
 - d. Other (please specify)

2. How many fully online courses have you taken in the past 5 years, including this one?
 - a. One
 - b. Two
 - c. Three
 - d. Four or more

3. How many hybrid (80% - 99% online) courses have you taken in the past 5 years?
 - a. None
 - b. One
 - c. Two
 - d. Three or more

4. Have you received instruction from a librarian on how to do library research as part of a prior course at Towson University?
 - a. Yes
 - b. No
 - c. Not sure
 - d. Other (please specify)

5. Have you received instruction from a librarian on how to do library research as part of a prior course at another school, college or university?
 - a. Yes
 - b. No
 - c. Not sure
 - d. Other (please specify)

A librarian was assigned to your course (specify course number, title and instructor), and was available to assist you throughout the course. For the questions below, please check all responses that apply.

6. How often did you seek assistance from the librarian assigned to this course?
 - a. Never
 - b. One time
 - c. Two or three times
 - d. Four or more times

7. What types of assistance did you seek from the librarian?
 - a. Defining a topic
 - b. Constructing a search strategy
 - c. Using the library's online catalog
 - d. Getting access to library's the online databases from off-campus
 - e. Selecting online databases to use
 - f. Using and searching in online databases
 - g. Selecting journals to use
 - h. Ordering materials from other University System of Maryland libraries
 - i. Ordering materials from other libraries through interlibrary loan
 - j. Using proper citation style
 - k. Using Ref Works or other bibliographic tool
 - l. None of the above
 - m. Other (please specify)

8. What types of assistance did you receive from the librarian through the Blackboard[®] course site?
 - a. General information about library resources and services
 - b. Responses to questions you posted on the course Blackboard[®] site
 - c. Responses to questions posted by other students on the course Blackboard[®] site
 - d. Link to the librarian's website
 - e. Links to library tutorials
 - f. Links to Subject Guides
 - g. Links to Course Gateways
 - h. Links to Help Guides
 - i. Link to the Cook Library website
 - j. None of the above
 - k. Other (please specify)

9. Other than the Blackboard[®] site, in what ways did you seek or receive assistance from the librarian?
 - a. E-mail
 - b. Telephone
 - c. Text-messages
 - d. Instant messaging
 - e. Teleconferencing
 - f. In person
 - g. None of the above
 - h. Other (please specify)

10. In your opinion, do you think a formal library instruction lesson would have been valuable to you in this class?
 - a. Yes
 - b. No

- c. Not sure
- d. Other (please specify)

11. In your opinion, do you think having a librarian assigned to this class contributed to your success in the course?

- a. Yes
- b. No
- c. Not sure
- d. Other (please specify)

12. In your opinion, do you think it was valuable to you to have a librarian assigned to this course and participating in the Blackboard[®] course site?

- a. Yes
- b. No
- c. Not sure
- d. Other (please specify)

13. What suggestions do you have for enhancing library support to students in online courses?

Thank you for participating in this survey.
Your responses will help us provide high quality library support to online learners.

Appendix E

Approval form Towson University Institutional Review Board:

Examining the Role of the Embedded Librarian in Online Learning: A Qualitative Study



EXEMPTION NUMBER: 12-1X49

To: Deborah Nolan
 From: Institutional Review Board for the Protection of Human
 Subjects, Justin Buckingham, Member JB/WNV
 Date: Monday, July 16, 2012
 RE: Application for Approval of Research Involving the Use of
 Human Participants

Office of University
 Research Services
 Towson University
 8000 York Road
 Towson, MD 21252-0001
 t. 410 704-2236
 f. 410 704-4494

Thank you for submitting an application for approval of the research titled,
*Examining the Role of the Embedded librarian in Online Learning: A
 Qualitative Study*

to the Institutional Review Board for the Protection of Human Participants
 (IRB) at Towson University.

Your research is exempt from general Human Participants requirements
 according to 45 CFR 46.101(b)(2). No further review of this project is
 required from year to year provided it does not deviate from the submitted
 research design.

If you substantially change your research project or your survey
 instrument, please notify the Board immediately.

We wish you every success in your research project.

CC: L. Song
 File

Appendix F

Case 1 – Coding Scheme for Instructor Data

Code	Category	Theme
Postings on Blackboard® E-mail Blogs Discussion boards “Ask a Librarian” space	Communication Means of	Value of the embedded librarian
Clear and wide messages Clear message subjects Professional in feedback Reduced “distance”	Quality of	
Chat communication tips Professional in content	Content of	
Tone, affect, friendly, inviting	Style of	
“Right there”	Librarian availability	
Efficient Contribution of time Expertise	Librarian competence	
Search strategies Evaluating sources Narrowing topics Locating full text Retrieving full text Key search terms Deliberate Helpful	Assistance provided to students	
Update instructor resources	Assistance provided to instructor	
Lack of library research skills First experience with published research	Student characteristics	Challenges to the work of the embedded librarian
Blackboard® CMS	Technology functionality	

Interactive capabilities		
Customized resource guides for course	Supporting resources	Future enhancements to work of embedded librarian
Lessons librarian teaches Course assignments hosted by librarian When students use librarian	Instruction and assignments	
Update instructor's website	Assistance provided to instructor	
Improve CMS, mobile, web 2.0, interactive technologies	Technology functionality	
Research methods & theory Online courses Undergraduate, master's and doctoral	Types of courses to support	

Appendix G

Case 1 – Coding Scheme for Student Data

Code	Category	Theme
Very engaged” in e-mail Group e-mails Frequent e-mails Virtual office hours Posted on Blackboard®	Communication Means of	Value of the embedded librarian
Quick responses Updates, reminders Offers to help Followed up on questions	Quality of	
Friendly, welcoming	Style of	
Late at night “He was there” Having a person to contact Presence even if assistance not required Knowing he was there In lieu of instructor When primary instructor not available	Librarian availability	
Prior library instruction Research experience Knowledge of databases Prior experience with a librarian	Student characteristics	
Links to information APA citation tips Helpful tips Help finding resources Video tutorial Boolean search strategies Course gateway to resources Requesting ILL Pointing to library resources “Answer questions specific to library issues”	Assistance provided to students	

<p>Contributed to success in course Participation in Blackboard® valuable May use in future</p>	<p>Student learning</p>
<p>“Older generation” without technology experience Did not use Did not need Did not notice benefit</p>	<p>Student characteristics Minimal value</p>
<p>Library instruction Undergraduate courses Higher level content-specific courses Research-based courses Online courses</p>	<p>Formal library instruction Types of courses to support Future enhancements to work of embedded librarian</p>

Appendix H

Case 2 – Coding Scheme for Instructor Data

Code	Category	Theme
E-mail Librarian explained how he would “connect with the students” Virtual office hours Students contacted librarian	Communication Means of	Value of the embedded librarian
Cleared up misunderstandings Librarian encouraged students to contact him	Content of	
Underprepared students Inadequate library experience	Student characteristics	
Librarians have more skills and knowledge than instructor in areas	Librarian competence	
Research strategies APA citation style Pleased to have additional support Gives student additional resource	Assistance provided to students	
Improved student work	Student learning	
Added knowledge and skills	Assistance provided to instructor	
Online course format	Types of courses to support	
Late communication Inadequate timing to collaborate in course set up	Planning	Challenges to the work of the embedded librarian
New model of support Blackboard® designation of	Role clarification	

librarian	
Summer class – short session	Timing of course
Diverse backgrounds of students; varying disciplines	Student characteristics
Confidentiality of student performance	Student anonymity

Be more proactive in contacting librarian	Communication Quality of	Future enhancements to the work of the embedded librarian
Plan more for use of librarian's support Conversations ahead of time Better integration with course Carve out more time in course for librarian	Planning	
Explain more clearly how embedded librarian works in course Clarify collaborative support to students in using library and resources	Role clarification	
Do this in a regular semester	Timing of course	
More focus on plagiarism	Assistance provided to students	
Clarify rules for confidentiality of student information	Student anonymity	
Would be very helpful in doctoral courses	Types of courses to support	

Appendix I

Case 2 – Coding Scheme for Student Data

Code	Category	Theme
E-mail throughout course Meet virtually Virtual office hours Chats IM Blackboard® discussion board	Communication Means of	Value of the embedded librarian
Specific hours & late hours for assistance Responds within 24 hours Valuable participation in Blackboard®	Quality of	
Short summer course	Timing of course	
Prior library research experience Library skills Technology skills	Student characteristics	
“Just knowing he was there” “Availability - somebody that strictly focuses on online courses” Librarian in lieu of instructor Don’t need to bother professor Online & don’t see professor “Safety net”	Librarian availability	
“Go to” person for library assistance APA citations In text references Reference page APA manual “not very user friendly”	Assistance provided to students	

<p>“Scared about accidental plagiarism” APA example on library website Subject guides Interlibrary loan</p>	
<p>Would not have “done as effectively” and “earned as good as a grade probably” Contributed to success in course</p>	<p>Student learning</p>
<p>Use of library essential for this course Research-based courses Classes with heavy writing and citation workload Online Graduate</p>	<p>Types of courses to support</p>

<p>Some responses took too long</p>	<p>Communication Quality of</p>	<p>Challenges to the work of the embedded librarian</p>
<p>Virtual office hours conflicted with class schedule</p>	<p>Schedules of students and librarian</p>	
<p>Just back from 6 months “hospital affiliation” (internship) – “a lot of us forgot how to research”</p>	<p>Student characteristics</p>	
<p>Librarian not available at beginning of course</p>	<p>Librarian availability</p>	
<p>Instruction on accessing e-journals</p>	<p>Assistance provided to students</p>	
<p>Unable to use chat function</p>	<p>Technology functionality</p>	

<p>Respond within 24 hours consistently</p>	<p>Communication Quality of</p>	<p>Future enhancements to the work of the embedded librarian</p>
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“What other things do librarians do?”	Role clarification
Clarify virtual office hours Be aware of and avoid students’ schedule conflicts	Schedules of students and librarian
Be available first day	Librarian availability
Instructions for accessing H-drive Instructions on Bb for accessing librarian virtually (chat)	Assistance provided to students
Library instruction session	Formal library instruction
Implement in more courses “as we do move towards more technologically involved perspective in our classes” Graduate courses Online classes Consider financial resources when choosing course for embedded librarian	Types of courses to support

Appendix J

Case 3 – Coding Scheme for Instructor Data

Code	Category	Theme
Locating information “Dig around” the literature Assist with literature review	Assistance provided to students	Value of the embedded librarian
Limited lead time for planning Compressed summer format No room for information literacy module	Planning Timing of course	Challenges to the work of the embedded librarian
Set up earlier Define parameters for librarian’s responsibilities Demand on librarian’s time Work closely with librarian on course design Develop guidelines for lit review bibliography Create assignment requiring consultation with librarian about resources Why only online? Offer for both online and face-to-face courses	Planning Role clarification Instruction and assignments Types of courses to support	Future enhancements to work of embedded librarian

Appendix K

Case 3 – Coding Scheme for Student Data

Code	Category	Theme
Responded quickly to e-mail	Communication Quality	Value of the embedded librarian
Comfortable knowing someone was there “Gave me the strength” Nice to go to librarian Presence in Blackboard® “Feel strange contacting professor all the time” Having a “go to” Not everyone can go to the library	Librarian availability	
“General introductory guide”	Librarian competence	
Excellent assistance Finding information on library website Helpful responses to questions Information about resources Help with research databases Clarified assignment	Assistance provided to students	
Available for research portion of course Finding materials “essential” to research Writing 18 page research paper “Extremely integral to course” Contributed to success in course Another point of view Target areas we needed help “I would have been lost”	Student learning	

Less competent than subject librarian	Librarian competence	Challenges to the work of the embedded librarian
Could get support elsewhere Helped other students more than me Prefers subject specialist Would find same assistance at library	Minimal value	

Contact students every week	Communication Quality of	Future enhancements to work of embedded librarian
Should have research background in course being supported Need briefing of what they will support	Librarian competence	
How to use SPSS How to “access SPSS through library database”	Assistance provided to students	
“General links to sources that could be helpful” Video modules	Supporting resources	
How to look up & find information on topic Reduce feeling of being overwhelmed Many juniors & seniors “don’t know how to conduct proper research” Students might not ask for help even when they need it	Formal library instruction	
Good “introductory guide” Online courses Mandatory for online courses – professors so busy Not recommended for higher-level courses or “in-depth stuff”	Types of courses to support	

Appendix L

Case 4 – Coding Scheme for Instructor Data

Code	Category	Theme
Having the person there Having an active role in the course Having the person assigned to the class	Librarian availability	Value of the embedded librarian
Finding web sites Correcting URL's Locating resources	Assistant provided to students	
Quality of student work	Student learning	
Real time chats inconvenient	Communication Quality of	Challenges to the work of the embedded librarian
Compressed summer format Difficult to add new element in summer	Timing of course	
More proactive communication with students	Communication Quality of	Future enhancements to work of embedded librarian
Early planning	Planning	
More assistance on reliability, validity, perspectives and biases of sources	Assistance provided to students	
Provide instructor with "menu" of workable techniques and options Citation assignment on difficult resources Create assignments around the librarian	Instruction and assignments	
Media capture or similar	Instructional design	

technology	
More evidence students transfer and apply what's learned	Student learning
Assist new online teachers	Assistance provided to instructor

Appendix M

Case 4 – Coding Scheme for Student Data

Code	Category	Theme
Internet Chat E-mail	Communication Means of	Value of the embedded librarian
Initiative in offering help	Quality of	
Knowing he was there Presence in class Easy access	Librarian availability	
Links to information Alternative web pages Finding enough information Proper formatting APA Links related to assignments	Assistance provided to students	
Did not participate in discussion boards	Communication Means of	Challenges to the work of the embedded librarian
Not sure how to use librarian	Role clarification	
Students working full time Student travels Student overseas and time difference Librarian's vacation	Schedules of students and librarian	
Not familiar with technology Too busy to learn how to use technology	Student characteristics	
Not "proactive" in offering help	Assistance provided to students	
Did not need assistance Already had library skills	Minimal value	

Can always call the library Went to library in person
--

Clarify what assistance librarian will provide “What exactly does a librarian do?”	Role clarification	Future enhancements to work of embedded librarian
More assistance targeted to individual student topic	Assistance provided to students	
Depends on prior library research experience	Formal library instruction	
Lower level rather than upper level Research courses	Types of courses to support	

Appendix N

Coding Scheme for Librarian Data Across Four Cases

Code	Category	Theme
Real-time introductions Global responses Variety of channels Web-Ex Chat Virtual office hours Discussion board “Ask a Librarian”	Communication Means of ...	Value of the embedded librarian
Clear communication with students and instructors Instructor referrals	Quality and content of ...	
Continuous	Style of ...	
“Fine tuned collaboration” Planning time Integrated relationship	Planning	
Subject specialist Connection with instructor	Role clarification	
Prior library research skills	Student characteristics	
When assignments due When instructor away	Librarian availability	
Citation help Addressed student questions Depended on particular course	Assistance provided to students	
Pre-selected by instructor	Supporting resources	
Access to student work Access to assignments Observed improvements Referrals from instructor Clear expectations of instructor Commitment to student learning	Student learning	

Research course	Types of courses to support	
Virtual office hours – lack of student participation	Communication Means of ...	Challenges to the work of the embedded librarian
Misunderstood expectations Unclear logistics Insufficient communication prior to course Feedback responsibilities Instructor referrals to librarian	Quality and content of ...	
Insufficient lead time for adequate planning	Planning	
Instructor vs. librarian responsibilities Subject librarian Role designation in Blackboard®	Role clarification	
Summer schedule	Timing of course	
Librarian vacation	Schedules of students and librarian	
Strategy for help with citations	Assistance provided to students	
Instructor's inaccurate links Out of date resources Customize instructional guides Technology instructions	Supporting resources	
Chat tool function and student confusion Browsers Lack of participation in virtual office hours Java No external widgets to Blackboard Lack of convenient technology support for	Technology functionality	

online students		
Always on call Instructor couldn't see support librarian giving via e-mail Workspace and place Equivalency with other librarians	Workload	
Real time introductions via WebEx Virtual office hours	Communication Means of ...	Future enhancements to work of embedded librarian
Communicate embedded librarian's value Report questions and assistance provided "Volunteer what we can offer"	Quality and content of ...	
Greater visibility Active and regular	Style of ...	
More lead time More detailed planning Staging assignments	Planning	
Subject librarian's role Instructor's responsibilities Assessment responsibilities	Role clarification	
Understand faculty roles and academic culture Familiarity with Blackboard Flexibility Interpersonal skills Principles of online teaching	Librarian competence	
Customized help guides Ensure instructor resources are accurate Technology instructions	Supporting resources	
Citation instructions	Instruction and assignments	

Identifying and using valid resources	
Chunking, scaffolding, etc. Phase in things	Instructional design
Clarify value to student learning Track and report student questions and assistance provided	Student learning
Familiarity with technologies Test ahead of time Backup solutions Better chat tool	Technology functionality
Include time needed for planning and preparation	Workload
Prioritize needs Consider staffing shortages Formal research course Levels of embedding based on course research requirements Passive embedding Less embedding for undergraduates (fewer online courses for undergraduates) Fully online courses Online graduate courses Applied programs	Types of courses to support

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